

Service Manual

ORDER NO.
ARP2255

MULTI-PLAY COMPACT DISC PLAYER

PD-M550

UPW, KCXJS, MEMXJS, UBXJS, SD

PD-M455

KCXJS

PD-M450

UPW, KCXJS, MEMXJS, SD

- Refer to the service manual ARP2200, PD-M550, PD-M455 and PD-M450.
- This manual is applicable to the PD-M550/UPW, KCXJS, MEMXJS, UBXJS, SD, PD-M455 /KCXJS, PD-M450/UPW, KCXJS, MEMXJS and SD types.

1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS
 OHITETTAESSA OLET ALTTIINA
 NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
 ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING.
 NÅR SIKKERHEDSAFBRYDERE ER UDE AF
 FUNKTION UNDGA UDSÆTTELSE FOR
 STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA
 DEL ÄR ÖPPNAD OCH SPÄRREN
 ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.



LASER
 Kuva 1
 Lasersäteilyn
 varoitusmerkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
 EMITS INVISIBLE INFRARED RADIATION
 WHICH IS DANGEROUS TO EYES. THERE IS
 A WARNING SIGN ACCORDING TO PICTURE
 1 INSIDE THE DEVICE CLOSE TO THE LASER
 DIODE.



LASER
 Picture 1
 Warning sign for
 laser radiation

IMPORTANT

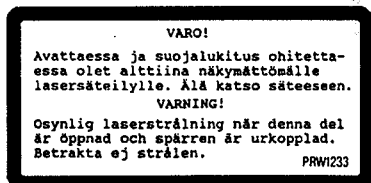
THIS PIONEER APPARATUS CONTAINS
 LASER OF HIGHER CLASS THAN 1.
 SERVICING OPERATION OF THE APPARATUS
 SHOULD BE DONE BY A SPECIALLY
 INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mw
 WAVELENGTH: 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

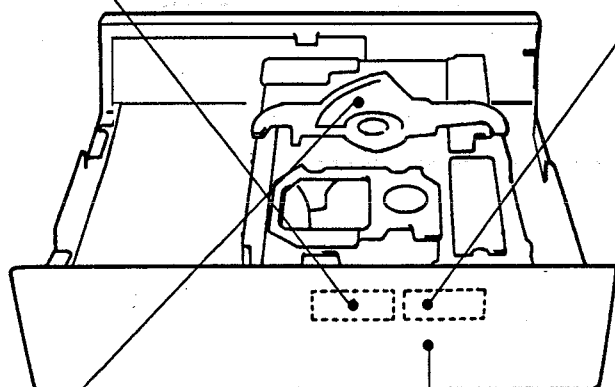
MEMXJS type



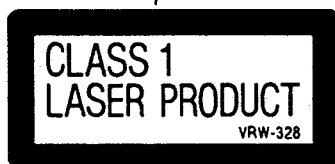
MEMXJS type



UBXJS type



MEMXJS and
 UBXJS types



MEMXJS and
 UBXJS types

Additional Laser Caution

1. Laser Interlock Mechanism

The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level)(clamped state).

Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.

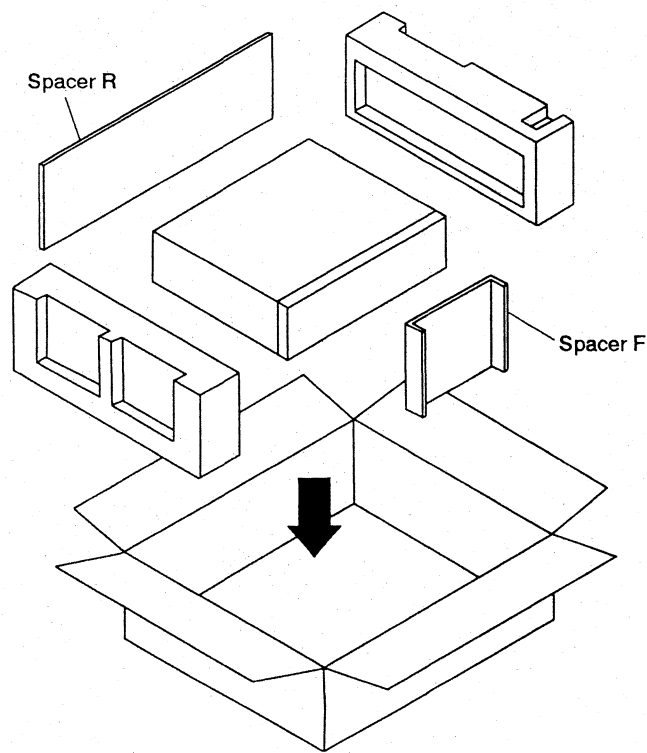
Also, in the test mode *, the interlock mechanism does not operate too.

Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

*: Refer to Service manual ARP2200, For PD-M550, PD-M455, PD-M453 and PD-M450.

● PACKING FOR KCXJ, MEMXJ AND UBXJ TYPES



2. CONTRAST OF MISGERANEOUS PARTS

- NOTES:
- Parts without part number cannot be supplied.
 - Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

2.1 FOR PD-M550/UPW, KCXJS, MEMXJS, UBXJS AND SD TYPES

The PD-M550/UPW, KCXJS, MEMXJS, UBXJS and SD types are the same as the PD-M550/KU type with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | | | | Remarks |
|------|---|------------------------|-------------------------|---------------------------|----------------------------|---------------------------|------------------------|-------------|
| | | PD-M550/ KU type | PD-M550/ UPW type | PD-M550/ KCXJS type | PD-M550/ MEMXJS type | PD-M550/ UBXJS type | PD-M550/ SD type | |
| ● | Mother board assembly | PWM1474 | PWM1475 | PWM1483 | PWM1484 | PWM1484 | PWM1476 | For packing |
| Δ | Power transformer (AC120V) | PTT1187 | ..... | PTT1203 | ..... | ..... | ..... |  |
| Δ | Power transformer (AC220V - 230V) | ..... | ..... | ..... | PTT1204 | ..... | ..... |  |
| Δ | Power transformer (AC230V - 240V) | ..... | PTT1189 | ..... | ..... | PTT1205 | ..... |  |
| Δ | Power transformer (AC110V, 120-127V, 220V - 230V, 230V - 240V) | ..... | ..... | ..... | ..... | ..... | PTT1190 | |
| Δ | AC power cord | RDG1010 | PDG1006 | RDG1010 | PDG1003 | PDG1036 | PDG1013 | |
| Δ | Strain relief | CM-22 | CM-22B | CM-22 | CM-22B | CM-22B | CM-22B | |
| Δ | Line voltage selector (AC110V, 120-127V, 220V - 230V, 230V - 240V) | ..... | ..... | ..... | ..... | ..... | PSB1002 | |
| Δ | Connection cord with mini plug | PDE-319 | ..... | PDE-319 | ..... | ..... | ..... |  |
| Δ | Display window | PAM1477 | PAM1477 | PAM1477 | PAM1505 | PAM1505 | PAM1477 | |
| Δ | CD packing case | PHG1611 | PHG1690 | PHG1684 | PHG1684 | PHG1684 | PHG1690 | For packing |
| Δ | Operating instructions (English) | PRB1142 | PRB1142 | PRB1152 | ..... | PRB1152 | PRB1142 | |
| Δ | Operating instructions (English/French/Dutch/Italian/German/Swedish/Spanish/Portuguese) | ..... | ..... | ..... | PRE1150 | ..... | ..... |  |
| Δ | Operating instructions (French) | | | PRC1037 | | | PRC1032 | |

MOTHER BOARD ASSEMBLIES (PWM1475, PWM1483, PWM1484 AND PWM1476)

The mother board assemblies (PWM1475, PWM1483, PWM1484 and PWM1476) are the same as the mother board assembly (PWM1474) with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | | | Remarks |
|------|----------------------|-------------|-------------|-------------|---------|-------------|---------|
| | | PWM1474 | PWM1475 | PWM1483 | PWM1484 | PWM1476 | |
| Δ | IC31 | | ICP-N10 | | ICP-N10 | | |
| Δ | D391-D394 | 1SS254 | ..... | 1SS254 | ..... | ..... |  |
| Δ | C366 | CKCYF103Z50 | CKCYF103Z50 | ..... | ..... | CKCYF103Z50 | |
| Δ | C393 | CCCSL101J50 | ..... | CCCSL101J50 | ..... | ..... |  |
| Δ | VR102, VR151, VR152 | VRTB6VS223 | VRTB6VS223 | RCP1046 | RCP1046 | VRTB6VS223 | |
| Δ | VR103 | VRTB6VS102 | VRTB6VS102 | RCP1044 | RCP1044 | VRTB6VS102 | |
| Δ | R391 | RD1/6PM244J | ..... | RD1/6PM244J | ..... | ..... |  |
| Δ | R392 | RD1/6PM102J | ..... | RD1/6PM102J | ..... | ..... |  |
| Δ | JA391, JA392 | PKN1004 | ..... | PKN1004 | ..... | ..... |  |
| Δ | [CONTROL (IN, OUT)] | ..... | ..... | ..... | ..... | ..... |  |

2.2 FOR PD-M455/KCXJS TYPE

The PD-M455/KCXJS type is the same as the PD-M455/KU

| Mark | Symbol & Description |
|------|----------------------------------|
| ● | Mother board assembly |
| Δ | Power transformer (AC120V) |
| Δ | CD packing case |
| Δ | Operating instructions (English) |
| Δ | Operating instructions (French) |

MOTHER BOARD ASSEMBLY (PWM1483)

As to the mother board assembly (PWM1483), refer to PD-M.

FUNCTION BOARD (PD - M550 TYPE)

S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM
S710 : REPEAT
S711 : PAUSE
S712 : AUTO
S713 : HI - LEVEL
S714 : COM
S715 : PGM
S716 : DELETE
S717 : TIME
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : ≥ 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 : $\triangleleft \triangleleft$
S731 : $\triangleright \triangleright$
S732 : PLAY
S733 : $\| \llcorner$
S734 : $\triangleright \triangleleft$
S735 : ADCL

| Mark | Symbol & Description | Pulse Width Modulation (PWM) Drivers | |
|------|---|---|--|
| | | PWM1468 | PWM1469 |
| △ | IC31 IC406 VR102, VR151, VR152 VR103 R445, R446 | VRTB6VS223 VRTB6VS102 RD1/6PM681J | RCP RCP RD1/6P |
| | R447, R448 CN401 C366 | CKCYF103Z50 | ..... ..... ..... |

1. RESISTORS :
Indicated in Ω , 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted k; k Ω ,
M; M Ω , (F); ± 1%, (G); ± 2%, (K); ± 10%, (M); ± 20% tolerance.

2. CAPACITORS :
Indicated in capacity(μ F)/voltage(V)unless otherwise noted p ; pF. Indication without
voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

□

 :DC voltage(V)at play state.
⇔ mA :DC current at play state.
Value in()is DC current at stop state.

4. OTHERS :
→ ;Signal route.
⊗ ;Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety
factor of the part. Therefore, when replacing, be sure to use parts of identical
designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to
improvements in design.

5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY

S801 : POWER ON — OFF

S802 : EJECT

SERVO MECHANISM ASSEMBLY

INSIDE SWITCH

LOADING BOARD ASSEMBLY

S601 : LPS1

S602 : LPS2

SELECT BOARD ASSEMBLY

S603 : MZS1

S604 : MZS2

S605 : DCHM

S606 : DCNT

FUNCTION BOARD ASSEMBLY
(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : ≥ 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 : <<<] MANUAL SEARCH
S731 : >>>]
S732 : PLAY
S733 : <<<] TRACK SEARCH
S734 : >>>]
S735 : ADLC

FUNCTION BOARD ASSEMBLY
(PD - M455 , AND PD - M450 TYPES)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S730 : <<<] MANUAL SEARCH
S731 : >>>]
S732 : PLAY
S733 : <<<] TRACK SEARCH
S734 : >>>]
S735 : ADLC

2.3 FOR PD-M450/UPW, KCXJS, MEMXJS AND SD TYPES

The PD-M450/UPW, KCXJS, MEMXJS and SD types are the same as the PD-M450/KU type with the exception of the following sections.

/KU type with the exception of the following sections.

| Part No. | | Remarks |
|---|---|-------------|
| PD-M455/ KU type | PD-M455/ KCXJS type | |
| PWM1474 PTT1187 PHG1596 PRB1142 | PWM1483 PTT1203 PHG1685 PRB1152 PRC1037 | For packing |

D-M550/KCXJS type.

| Mark | Symbol & Description | Part No. | | | | | Remarks |
|------|--|------------------------|-------------------------|---------------------------|----------------------------|------------------------|-------------|
| | | PD-M450/ KU type | PD-M450/ UPW type | PD-M450/ KCXJS type | PD-M450/ MEMXJS type | PD-M450/ SD type | |
| ● | Mother board assembly | PWM1468 | PWM1468 | PWM1480 | PWM1481 | PWM1470 | |
| △ | Headphone board assembly | ..... | ..... | ..... | Non supply | ..... |  |
| △ | Power transformer (AC120V) | PTT1187 | ..... | PTT1203 | ..... | ..... |  |
| △ | Power transformer (AC220V - 230V) | ..... | ..... | ..... | PTT1204 | ..... |  |
| △ | Power transformer (AC230V - 240V) | ..... | PTT1189 | ..... | ..... | ..... |  |
| △ | Power transformer (AC110V, 120 - 127V, 220V - 230V, 230V - 240V) | ..... | ..... | ..... | ..... | PTT1190 | |
| △ | Strain relief | CM - 22 | CM - 22B | CM - 22 | CM - 22B | CM - 22B | |
| △ | AC power cord | RDG1010 | PDG1006 | RDG1010 | PDG1003 | PDG1013 | |
| △ | Line voltage selector (AC110V, 120 - 127V, 220V - 230V, 230V - 240V) | ..... | ..... | ..... | ..... | PSB1002 | |
| | Headphone knob | ..... | ..... | ..... | PAC1370 | ..... |  |
| | Display window | PAM1478 | PAM1478 | PAM1478 | PAM1506 | PAM1478 | |
| | Function panel assembly | PEA1134 | PEA1134 | PEA1134 | PEA1160 | PEA1134 | |
| | Leg assembly | PXA1201 | PXA1201 | PXA1201 | ..... | PXA1201 | |
| | Insulator | ..... | ..... | ..... | VNK1095 | ..... |  |
| | Stopper | ..... | ..... | ..... | PNM1070 | ..... |  |
| | Function panel | Non supply | Non supply | Non supply | Non supply | Non supply | |
| | CD packing case | PHG1597 | PHG1691 | PHG1686 | PHG1686 | PHG1691 | For packing |
| | Operating instructions (English) | PRB1142 | PRB1142 | PRB1152 | ..... | PRB1142 | |
| | Operating instructions (English/French/Dutch/Italian/ German/Swedish/Spanish/Portuguese) | ..... | ..... | ..... | PRE1150 | ..... |  |
| | Operating instructions (French) | ..... | ..... | PRC1037 | ..... | PRC1032 | |

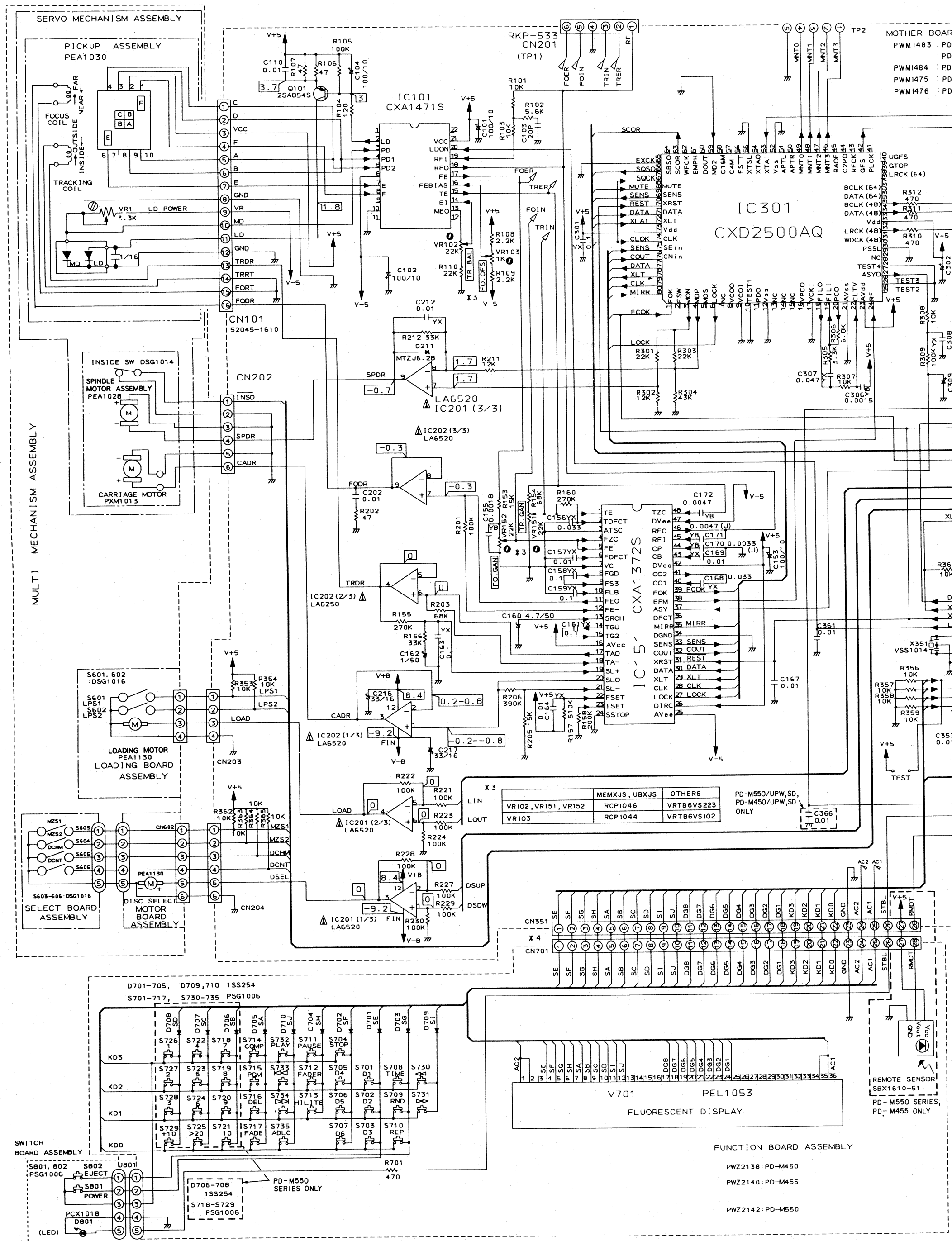
The headphone board assembly of PD-M450/MEMXJS is the same as that of PD-M550.

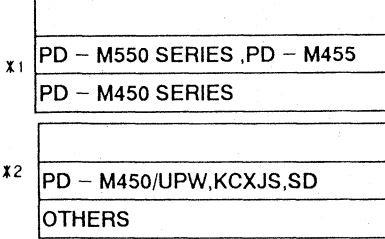
MOTHER BOARD ASSEMBLIES (PWM1480, PWM1481 and PWM1470)

The mother board assemblies (PWM1480, PWM1481 and PWM1470) are the same as the mother board assembly (PWM1468) with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | | Remarks |
|------|----------------------|-------------|-------------|-------------|-------------|---------|
| | | PWM1468 | PWM1480 | PWM1481 | PWM1470 | |
| △ | IC31 | | | ICP - N10 | | |
| | IC406 | ..... | ..... | BA15218 | ..... |  |
| | VRTB6VS223 | VRTB6VS223 | RCP1046 | RCP1046 | VRTB6VS223 | |
| | VR102, VR151, VR152 | VRTB6VS102 | RCP1044 | RCP1044 | VRTB6VS102 | |
| | VR103 | RD1/6PM681J | RD1/6PM681J | RD1/6PM271J | RD1/6PM681J | |
| | R445, R446 | | | | | |
| | R447, R448 | ..... | ..... | RD1/6PM471J | ..... |  |
| | CN401 | ..... | ..... | Non supply | ..... |  |
| | C366 | CKCYF103Z50 | ..... | ..... | CKCYF103Z50 | |
| | | | | | | |

2.4 SCHEMATIC DIAGRAM



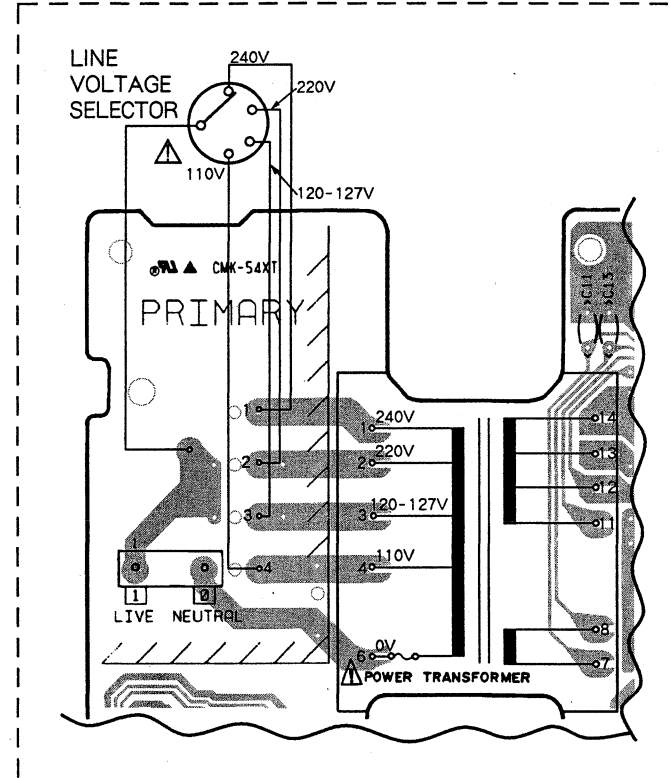


2.5 P.C.BOARD PATTERN

| P.C.B. pattern diagram indication | Corresponding part symbol | Part name |
|-----------------------------------|---------------------------|--|
| | | Transistor |
| | | FET |
| | | Diode |
| | | Zener diode |
| | | LED |
| | | Varactor |
| | | Tact switch |
| | | Inductor |
| | | Coil |
| | | Transformer |
| | | Filter |
| | | Ceramic capacitor |
| | | Mylar capacitor |
| | | Styrol capacitor |
| | | Electrolytic capacitor (Non polarized) |
| | | Electrolytic capacitor (Noiseless) |
| | | Electrolytic capacitor (Polarized) |
| | | Electrolytic capacitor (Polarized) |
| | | Power capacitor |
| | | Semi-fixed resistor |
| | | Resistor array |
| | | Resistor |
| | | Resonator |
| | | Thermistor |

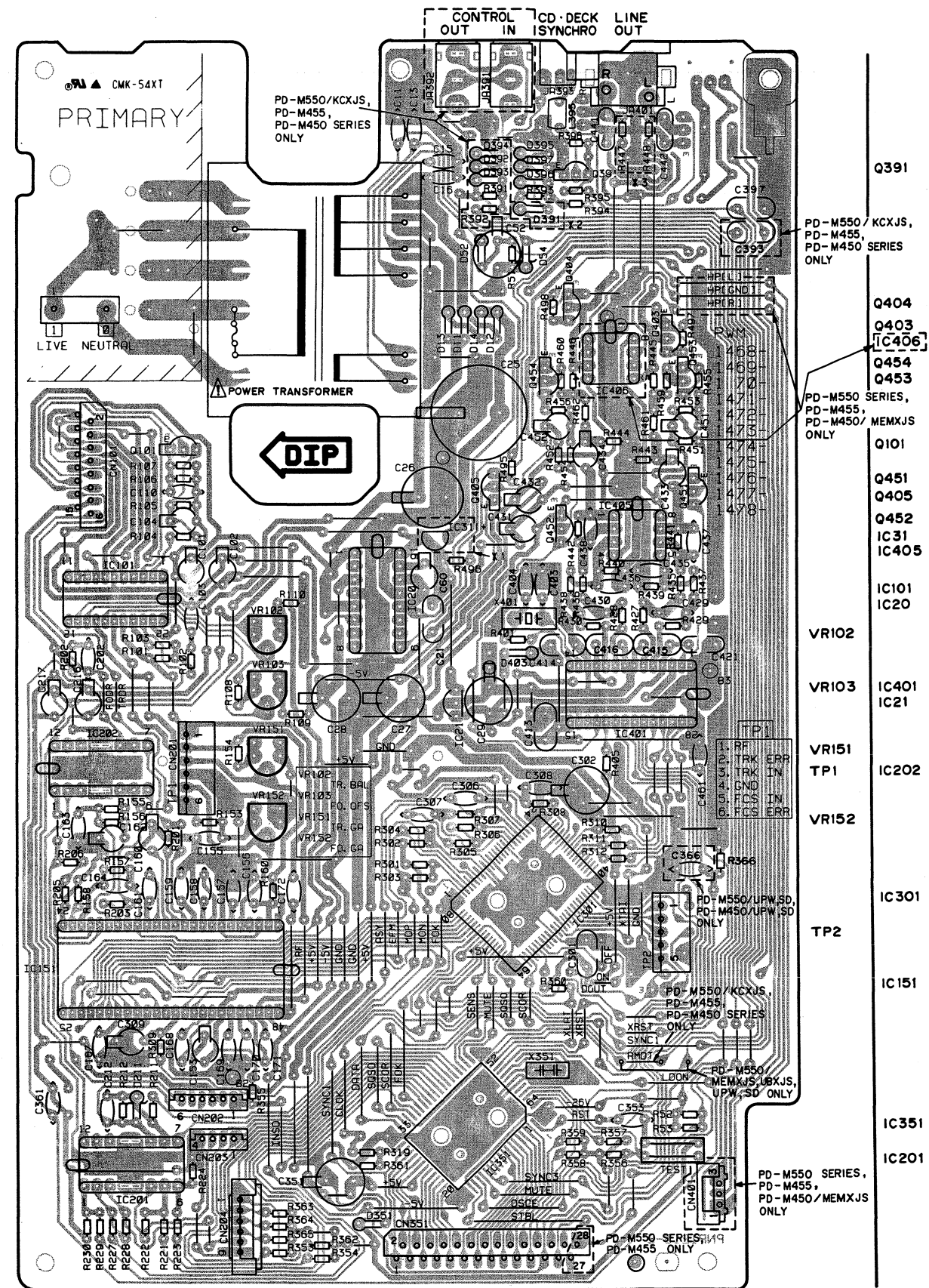
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

● FOR PD-M550/SD AND PD-M450/SD

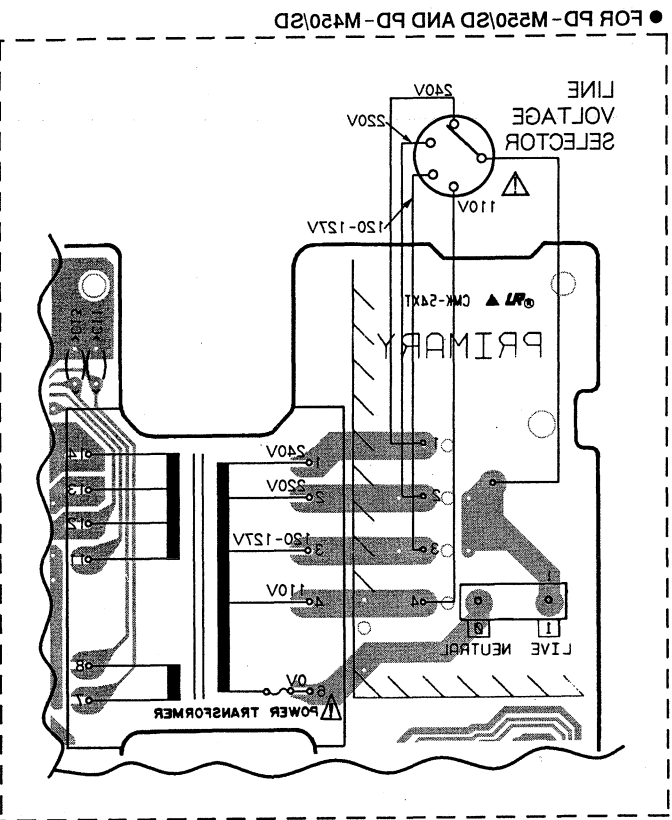


MOTHER BOARD ASSEMBLY
 (PWM1483 : PD-M550/KCXJS,PD-M455/KCXJS)
 (PWM1484 : PD-M550/MEMXJS,UBXJS)
 (PWM1475 : PD-M550/UPW)
 (PWM1476 : PD-M550/SD)
 (PWM1480 : PD-M450/KCXJS)
 (PWM1481 : PD-M450/MEMXJS)
 (PWM1468 : PD-M450/UPW)
 (PWM1470 : PD-M450/SD)

PD-M550/UPW,KCXJS,MEMXJS,UBXJS,SD
 PD-M455/KCXJS,PD-M450/UPW,KCXJS,MEMXJS,SD



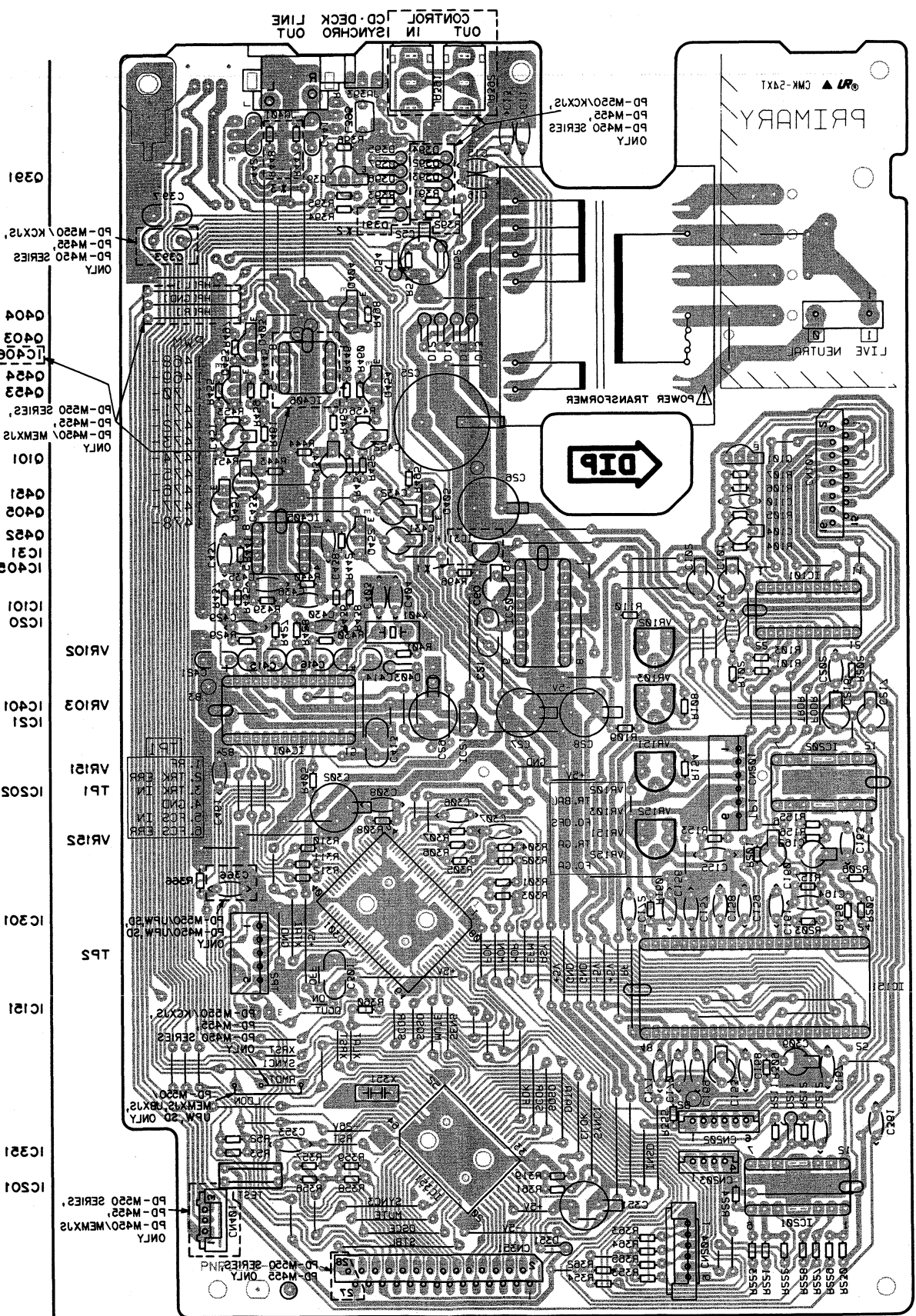
2.2 P.C. BOARD PATTERN



MOTHER BOARD ASSEMBLY
 (PWM1483 : PD-M250\KCX12,PD-M450\KCX12)
 (PWM1484 : PD-M250\MEMX12\UBX12)
 (PWM1475 : PD-M250\UPW)
 (PWM1476 : PD-M250\2D)
 (PWM1480 : PD-M450\KCX12)
 (PWM1481 : PD-M450\MEMX12)
 (PWM1468 : PD-M450\UPW)
 (PWM1470 : PD-M450\2D)

This P.C.B. connection diagram is viewed from the foil side.

FOR PD-M250\2D AND PD-M450\2D



PD-M450\KCX12,PD-M450\UPW,KCX12,MEMX12,2D
 PD-M250\UPW,KCX12,MEMX12,UBX12,2D

XR 128

PIONEER
The Art of Entertainment

297

Service Manual



● PD-M550 TYPE

ORDER NO.
ARP2200

MULTI-PLAY COMPACT DISC PLAYER

PD-M550

PD-M455

PD-M453

PD-M450

PD-M550, PD-M455, PD-M453 AND PD-M450 HAVE THE FOLLOWING:

| Type | Model | | | | Power Requirement | Remarks |
|--------|---------|---------|---------|---------|---|---------|
| | PD-M550 | PD-M455 | PD-M453 | PD-M450 | | |
| KU | ○ | ○ | ○ | ○ | AC120V only | |
| KUXJS | ○ | ○ | ○ | ○ | AC120V only | |
| KC | ○ | ○ | — | ○ | AC120V only | |
| KCXJS | ○ | ○ | — | ○ | AC120V only | |
| MEM | ○ | — | — | ○ | AC220V-230V | |
| MEMXJS | ○ | — | — | ○ | AC220V-230V | |
| UB | ○ | — | — | — | AC230V-240V | |
| UBXJS | ○ | — | — | — | AC230V-240V | |
| UPW | ○ | — | — | ○ | AC230V-240V | |
| SD | ○ | — | — | ○ | AC110V, 120V-127V, 220V, 240V(switchable) | |

- The KUXJS type of PD-M550, PD-M455, PD-M453 and PD-M450, manufactured in Singapore, are identical with the KU type of PD-M550, PD-M455, PD-M453 and PD-M450 respectively.

For identification, "MADE IN SINGAPORE" is shown on the rear panel of the product.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
 © PIONEER ELECTRONIC CORPORATION 1991

IFO MAR. 1991 Printed in Japan

297

- This manual is applicable to the PD- M550/KU, KC, KUXJS, MEM, UB, PD- M455/KU, KC, KUXJS, PD- M453/KU, KUXJS, PD- M450/KU, KC, KUXJS and MEM types.
- As to the PD- M550/KC, KUXJS, MEM, UB, PD- M455/KC, KUXJS, PD- M453/KUXJS, PD- M450 /KC, KUXJS and MEM types, refer to page 74- 84.
- As to the other types, refer to applicable service manuals.
- As to the mechanism descriptions, refer to the PD- Z84M service guide(ARP2190).
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

CONTENTS

| | | | |
|--|----|--|----|
| 1. SAFETY INFORMATION | 3 | 8. ADJUSTMENTS | 29 |
| 2. EXPLODED VIEWS AND PARTS LIST | 5 | RÉGLAGES | 44 |
| 3. PACKING | 11 | AJUSTES | 59 |
| 4. IC INFORMATION | 12 | 9. FOR PD- M550/KUXJS, KC, MEM, UB, PD- M455/KUXJS, KC, PD- M453/KUXJS, PD- M450/KUXJS, KC AND MEM TYPES | 74 |
| 5. SCHEMATIC DIAGRAM | 13 | 10. PANEL FACILITIES | 85 |
| 6. P.C.BOARDS CONNECTION DIAGRAM | 19 | 11. SPECIFICATION | 87 |
| 7. P.C.B's PARTS LIST | 27 | | |

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

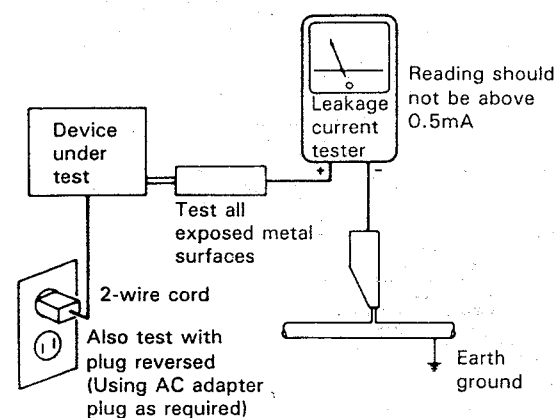
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.



LASER
Kuva 1
Lasersäteilyn
varoitusmerkki

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÅR DENNA
DEL ÄR ÖPPNAD OCH SPÄRREN
ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.

WARNING!
DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADIATION
WHICH IS DANGEROUS TO EYES. THERE IS
A WARNING SIGN ACCORDING TO PICTURE
1 INSIDE THE DEVICE CLOSE TO THE LASER
DIODE.



LASER
Picture 1
Warning sign for
laser radiation

IMPORTANT
THIS PIONEER APPARATUS CONTAINS
LASER OF HIGHER CLASS THAN 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

MEM type

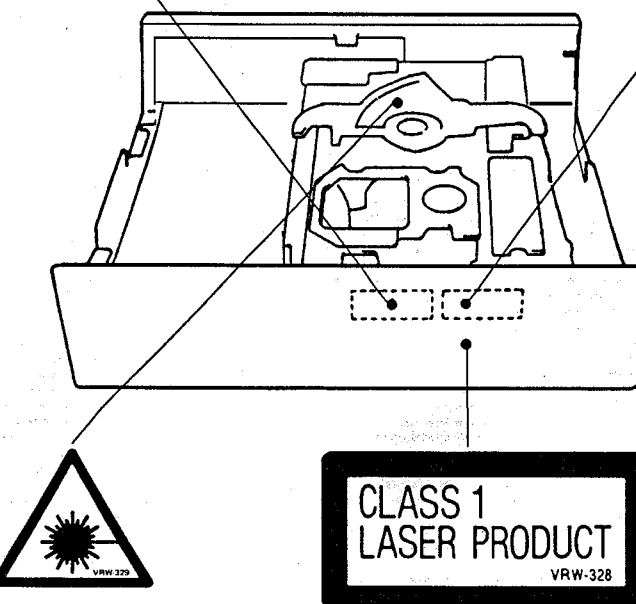
UB type

MEM type

VARO!
Avattaessa ja suojalukitus ohitetta-
essa olet alttiina näkymättömälle
lasersäteilylle. Älä katso säteeseen.
VARO!
Osynlig laserstrålning när denna del
är öppnad och spärren är urkopplad.
Betrakta ej strålen.
PRW1233

ADVERSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAF-
BRYDERE ER UDE AF FUNKTION.
UNGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRÅHLUNG TRIT AUS, WENN DECKEL
(ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM
PRW1018



MEM and UB types

MEM and UB types

Additional Laser Caution

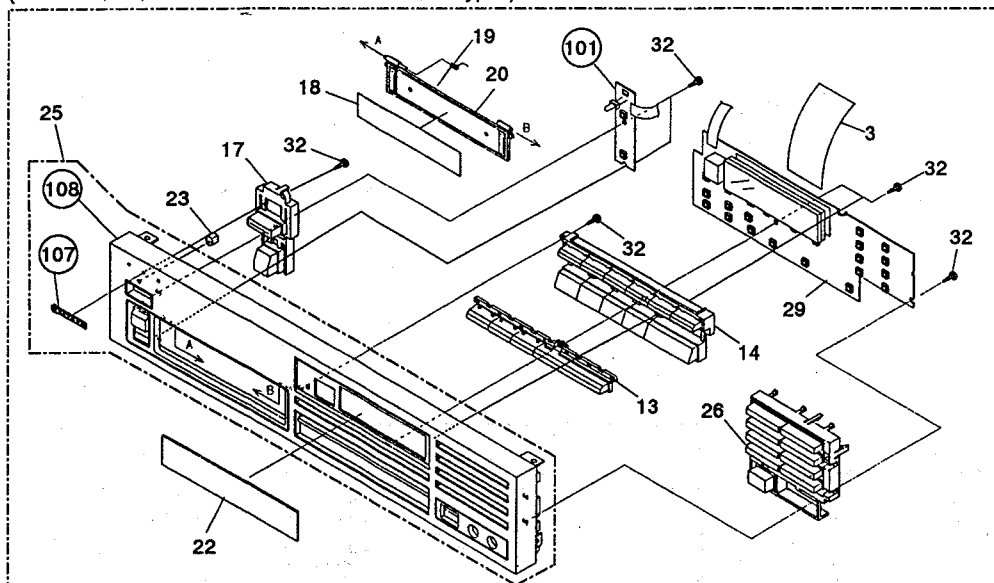
- Laser Interlock Mechanism**
The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level) (clamped state).
Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.
Also, in the test mode *, the interlock mechanism does not operate too.
Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).
- When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

*: Refer to page 30.

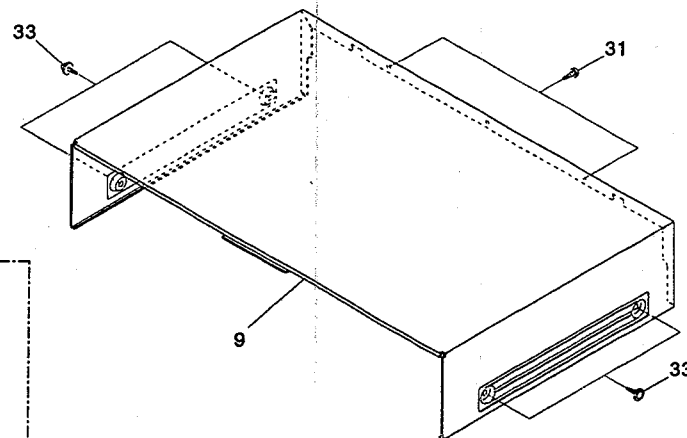
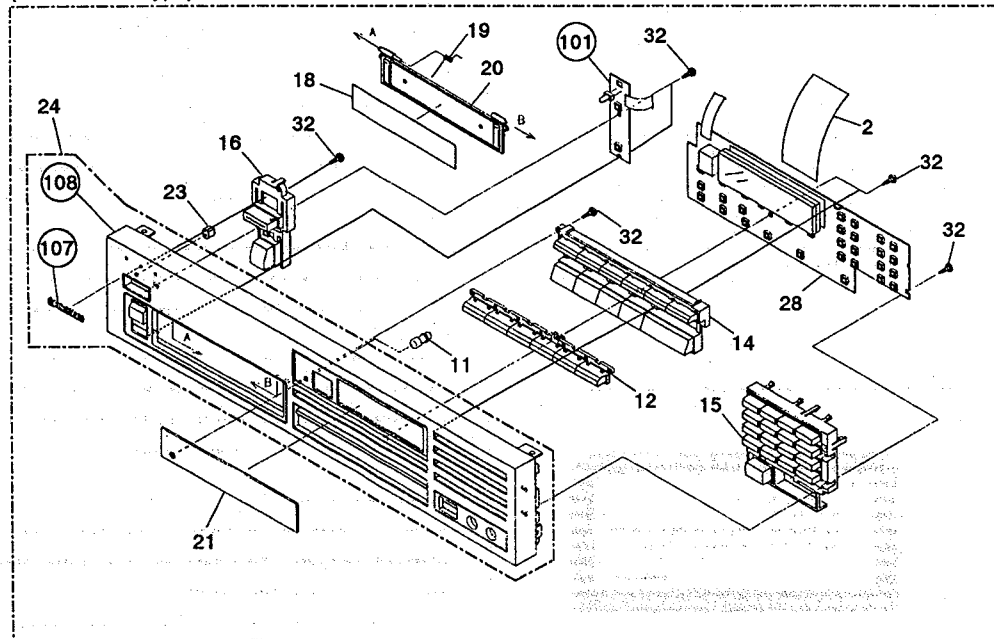
2. EXPLODED VIEWS AND PARTS LIST

2.1 EXTERIOR

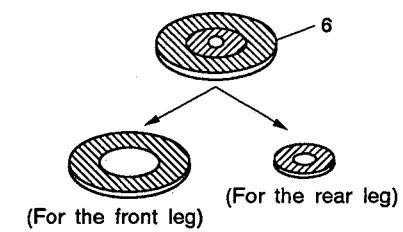
(PD-M455/KU, PD-M453/KU and PD-M450/KU types)



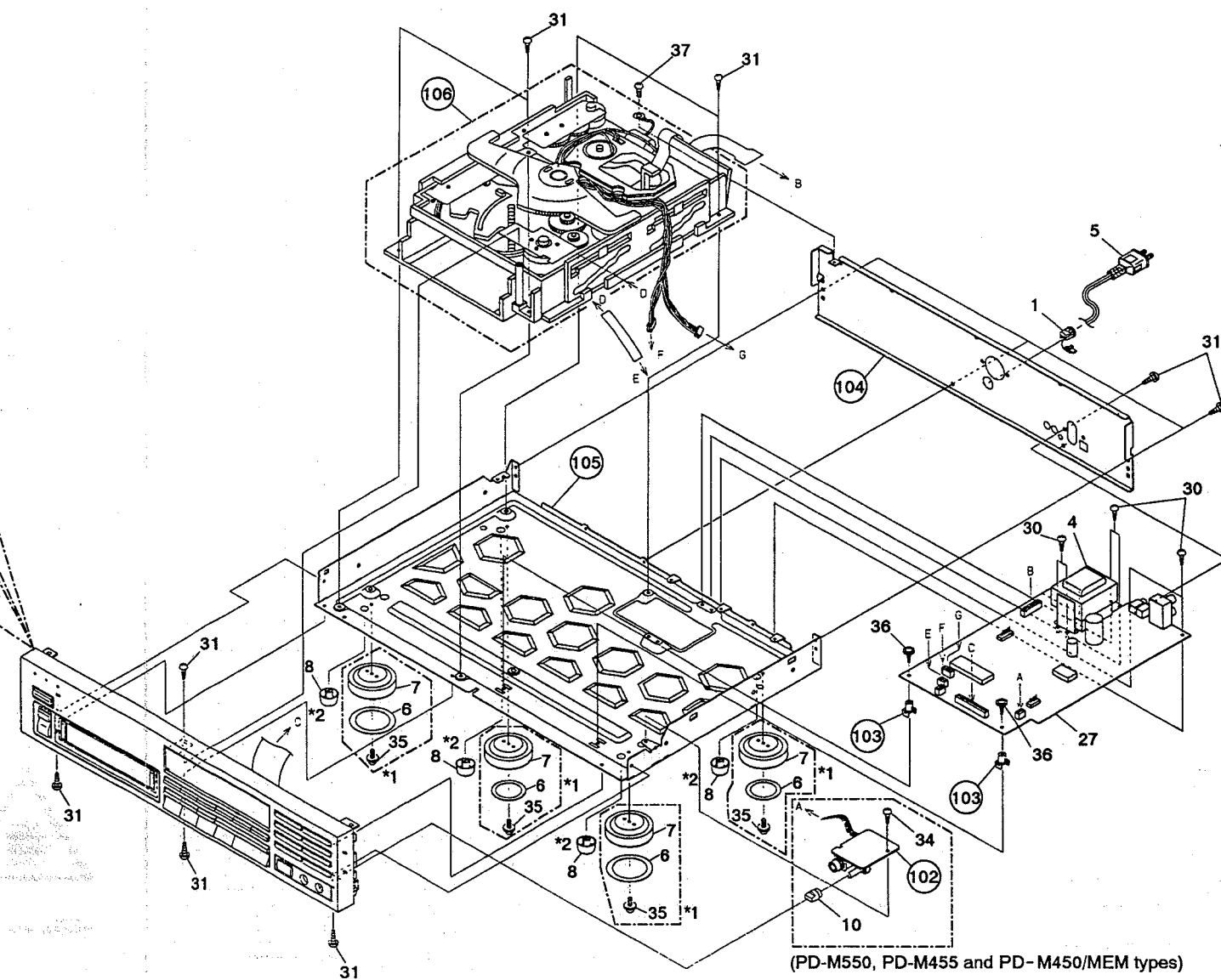
(PD-M550/KU type)



* The stopper consist of the big ring part and the small ring part.
If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



Note:
*1: PD-M550 and PD-M450/MEM types
*2: PD-M455, PD-M453, PD-M450/KU, KUXJS and KC types



NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

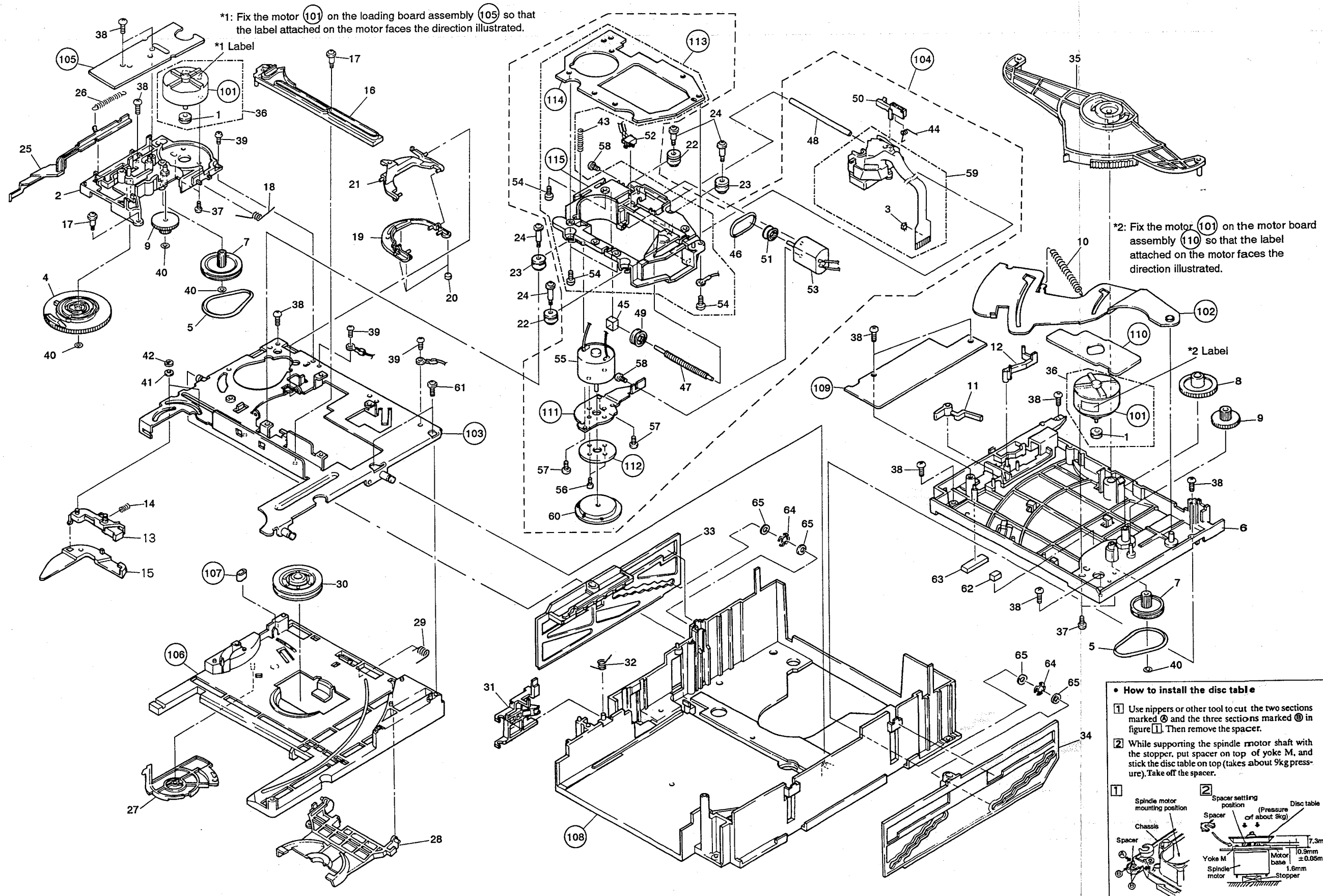
| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|----------|-----|--|----------|------|-----|--|--------------|
| Δ | 1 | Strain relief | CM-22 | | 24 | Function panel assembly | PEA1136 |
| | 2 | Flexible cable (28P) | PDD1070 | | 25 | Function panel assembly | PEA1135 |
| | 3 | Flexible cable (28P) (For PD-M455 and PD-M453 types) | PDD1070 | | 25 | Function panel assembly (For PD-M455 type) | PEA1162 |
| | 3 | Flexible cable (26P) (For PD-M450 type) | PDD1079 | | 25 | Function panel assembly (For PD-M453 type) | PEA1134 |
| Δ | 4 | Power transformer (AC120V) | PTT1187 | | 26 | Track button A | PAC1564 |
| Δ | 5 | AC power cord | RDG1010 | | 26 | Track button (For PD-M455 type) | PAC1579 |
| | 6 | Stopper (PD-M550 type only) | PNM1070 | | 26 | Track button (For PD-M453 and PD-M450 types) | PAC1579 |
| | 7 | Insulator (PD-M550 type only) | VNK1095 | ⊙ | 27 | Mother board assembly (For PD-M550 and PD-M455 types) | PWM1474 |
| | 8 | Leg assembly (PD-M455, PD-M453 and PD-M450 types only) | PXA1201 | ⊙ | 27 | Mother board assembly (For PD-M453 type) | PWM1472 |
| | 9 | Bonnet | PYY1149 | ⊙ | 27 | Mother board assembly (For PD-M450 type) | PWM1468 |
| | 10 | Headphone knob | PAC1370 | ⊙ | 28 | Function board assembly | PWZ2142 |
| | 11 | Time button B (PD-M550 type only) | PAC1549 | ⊙ | 29 | Function board assembly (For PD-M455 and PD-M453 types) | PWZ2140 |
| | 12 | Mode button A | PAC1560 | ⊙ | 29 | Function board assembly (For PD-M450 type) | PWZ2138 |
| | 13 | Mode button B | PAC1563 | | 30 | Screw | BBZ30P060FMC |
| | 14 | Function button | PAC1562 | | 31 | Screw | BBZ30P080FZK |
| | 15 | Program button | PAC1577 | | 32 | Screw | BBZ30P120FZK |
| | 16 | Power button A | PAC1596 | | 33 | Screw | FBT40P080FZK |
| | 17 | Power button A (For PD-M455 type) | PAC1596 | | 34 | Screw | IBZ30P060FCC |
| | 17 | Power button (For PD-M453 and PD-M450 types) | PAC1561 | | 35 | Screw | IBZ30P100FCC |
| | 18 | Door name plate. | PAM1461 | | 36 | Screw | IBZ30P180FMC |
| | 19 | Door spring | PBH1022 | | 37 | Screw | PDZ30P050FMC |
| | 20 | Door BK | PNW1894 | | | | |
| | 21 | Display window | PAM1477 | | | | |
| | 22 | Display window (For PD-M455 type) | PAM1476 | | | | |
| | 22 | Display window (For PD-M453 type) | PAM1511 | | 101 | Switch board assembly | |
| | 22 | Display window (For PD-M450 type) | PAM1478 | | 102 | Headphone board assembly | |
| | 23 | LED lens | PNW2019 | | 103 | PCB mold | |
| | | | | | 104 | Rear base | |
| | | | | | 105 | Under base | |
| | | | | | 106 | Multi mechanism assembly | |
| | | | | | 107 | PIONEER badge | |
| | | | | | 108 | Function panel | |

2.2 MULTI MECHANISM ASSEMBLY

Parts List

| Mark | No. | Description | Part No. |
|------|-----|--|--------------|
| | 1 | Motor pulley | PNW1634 |
| | 2 | Gear holder | PNW1929 |
| | 3 | Semi-fixed resistor (VR1) | PCP1008 |
| | 4 | Cam gear | PNW1923 |
| | 5 | Belt | PEB1138 |
| | 6 | Top guide | PNW1914 |
| | 7 | Gear pulley | PNW1918 |
| | 8 | Gear S | PNW1919 |
| | 9 | Gear L | PNW1920 |
| | 10 | Eject spring | PBH1107 |
| | 11 | Switch lever | PNW1927 |
| | 12 | Seven bar | PNW1931 |
| | 13 | Sub rotary lever | PNW1933 |
| | 14 | Sub rotary lever spring | PBH1111 |
| | 15 | Rotary lever | PNW1932 |
| | 16 | Drive plate | PNW1930 |
| | 17 | Motor screw | PBA - 112 |
| | 18 | Holder lever spring | PBH1110 |
| | 19 | Disc holder | PNW1924 |
| | 20 | Cushion A | PED1001 |
| | 21 | Holder lever | PNW1925 |
| | 22 | Float rubber | PEB1014 |
| | 23 | Float rubber | PEB1132 |
| | 24 | Float screw | PBA1055 |
| | 25 | Release lever | PNW1934 |
| | 26 | Release spring | PBH1106 |
| | 27 | Clamper cam | PNW1922 |
| | 28 | Clamper holder | PNW1921 |
| | 29 | Clamper spring | PBH1109 |
| | 30 | Clamper | PNW1857 |
| | 31 | Lock lever | PNW1917 |
| | 32 | Lock spring | PBH1108 |
| | 33 | Stair L | PNW1915 |
| | 34 | Stair R | PNW1916 |
| | 35 | Synchronize lever | PNW1926 |
| | 36 | Motor assembly (LOADING, DISC SELECT) | PEA1130 |
| | 37 | Screw | PMZ26P040FMC |
| | 38 | Screw | PPZ30P080FMC |
| | 39 | Screw | BBZ30P060FMC |
| | 40 | Washer | WT26D047D025 |
| | 41 | Washer | WA31D054D025 |
| | 42 | E ring | Z39-010 |
| | 43 | Earth spring | PBH1009 |
| | 44 | Drive spring | PBH1084 |
| | 45 | Plate spring | PBK1057 |

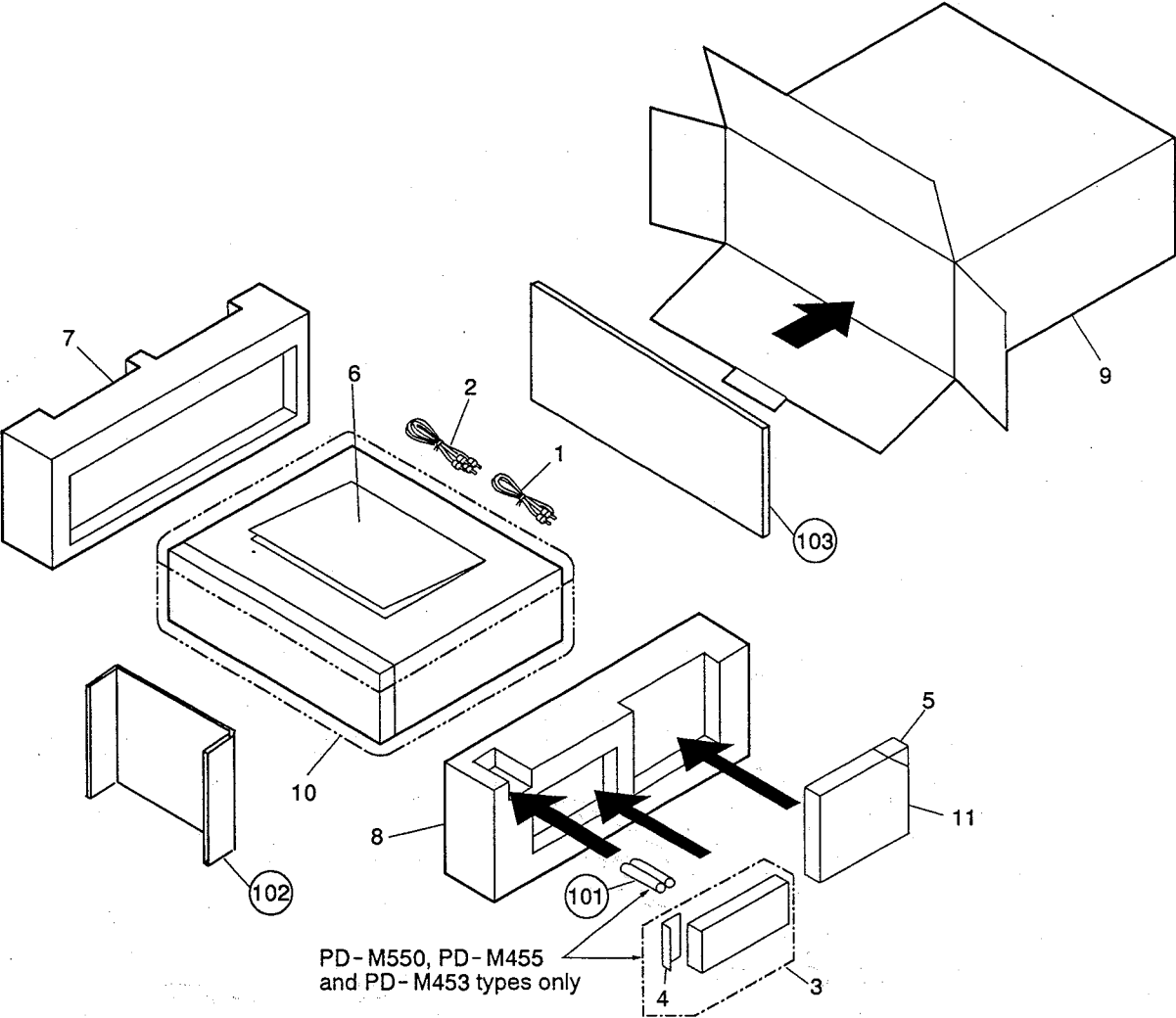
| Mark | No. | Description | Part No. |
|------|-----|---|--------------|
| | 46 | Belt | PEB1072 |
| | 47 | Drive screw | PLA1003 |
| | 48 | Guide bar | PLA1071 |
| | 49 | Pulley | PNW1066 |
| | 50 | Half nut | PNW1605 |
| | 51 | | |
| | 52 | Push switch (INSIDE) | DSG1014 |
| | 53 | D.C.motor (CARRIAGE) | PXM1013 |
| | 54 | Screw | PBZ30P080FMC |
| | 55 | D.C.motor assembly (with oil)(SPINDLE) | PEA1028 |
| | 56 | Screw | JFZ20P040FMC |
| | 57 | Screw | BPZ20P080FZK |
| | 58 | Screw | PMZ20P030FMC |
| | 59 | Pickup assembly | PEA1030 |
| | 60 | Disc table assembly | PEA1035 |
| | 61 | Screw | IPZ30P080FMC |
| | 62 | Rubber spacer | PEB1178 |
| | 63 | Rubber spacer | PEB1179 |
| | 64 | Silent ring | PBK1093 |
| | 65 | Washer | WA62D130D025 |
| | 101 | Motor | |
| | 102 | Eject lever | |
| | 103 | Upper chassis | |
| | 104 | Servo mechanism assembly M | |
| | 105 | Loading board assembly | |
| | 106 | Sub chassis | |
| | 107 | Rubber tube | |
| | 108 | Main chassis | |
| | 109 | Select board assembly | |
| | 110 | Motor board assembly | |
| | 111 | Motor base | |
| | 112 | Yoke M | |
| | 113 | Mechanism base assembly T | |
| | 114 | Mechanism base | |
| | 115 | Mechanism chassis | |



3. PACKING

Parts List

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|------|-----|---|----------|------|-----|------------------------------------|----------|
| | 1 | Connection cord with mini plug | PDE-319 | | 9 | CD packing case (For PD-M550 type) | PHG1611 |
| | 2 | Connection cord with pin plug | PDE1109 | | 9 | CD packing case (For PD-M455 type) | PHG1596 |
| | 3 | Remote control unit (For PD-M550 type) | PWW1066 | | 9 | CD packing case (For PD-M453 type) | PHG1668 |
| | 3 | Remote control unit (For PD-M455 and PD-M453 types) | PWW1068 | | 9 | CD packing case (For PD-M450 type) | PHG1597 |
| | 4 | Battery cover (For PD-M550 type) | PZN1001 | | 10 | Mirror mat sheet | Z23-007 |
| | 4 | Battery cover (For PD-M455 and PD-M453 types) | PZN1010 | | 11 | PP case | PYY1141 |
| | 5 | Magazine assembly | PXA1308 | | 101 | Dry cell battery(R03, AAA) | |
| | 6 | Operating instructions (English) | PRB1142 | | 102 | Spacer F | |
| | 7 | Styrol protector (L) | PHA1157 | | 103 | Spacer R | |
| | 8 | Styrol protector (R) | PHA1158 | | | | |



4. IC INFORMATION

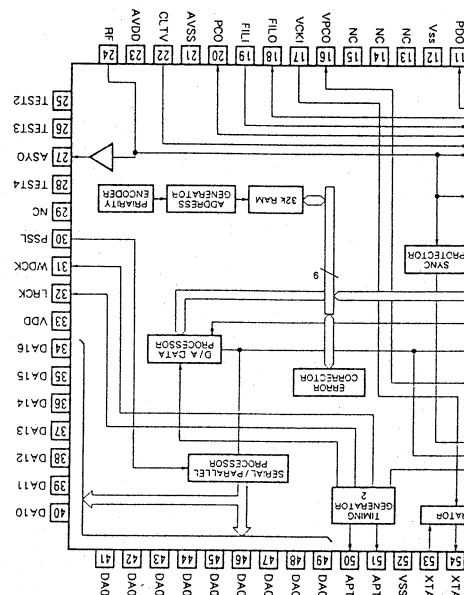
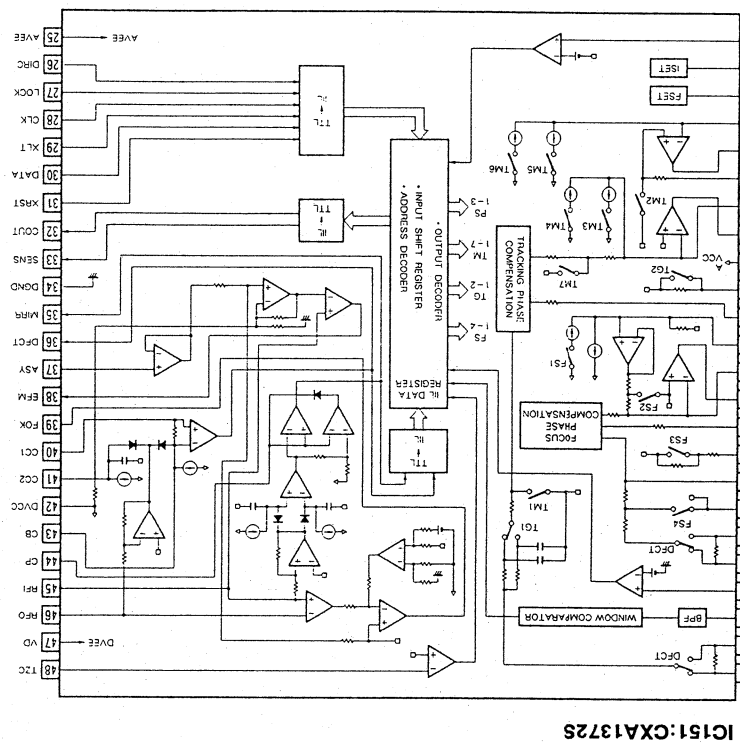
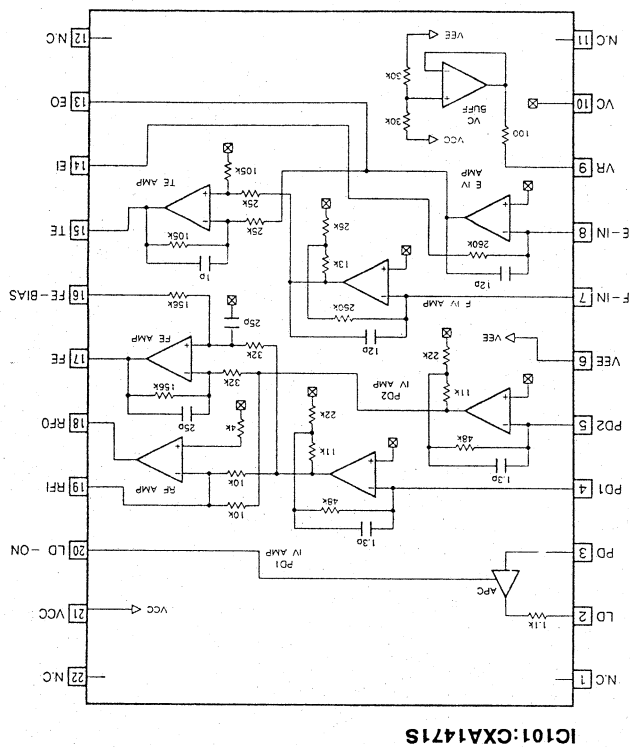
■ PD2026A

D/A converter

● Pin Function

| No. | Pin Name | I/O | Function | No. | Pin Name | I/O | Function | | | | | | | | | | | | | | | |
|------|-------------------|-----|---|-----|--------------------|-----|--|------------------------------------|---|---|---|---|-----|---|---|---|---|------|------|-----|----|----|
| 1 | P/ \overline{S} | I* | Switching the serial and parallel controls. | 20 | LATCH (EM1) | I* | Data latch signal input for attenuator when controlling the serial. Select the deemphasis filter mode when controlling the parallel. | | | | | | | | | | | | | | | |
| 2 | RZ | O | Digital zero detection output of R ch. | | | | | | | | | | | | | | | | | | | |
| 3 | \overline{TEST} | I* | Test terminal (usually, use at "H") | | | | | | | | | | | | | | | | | | | |
| 4 | VDA | — | Analog power supply for R ch DA converter. | 21 | SHIFT (EM2) | I | Shift clock input for attenuator when controlling the serial. Select the deemphasis filter mode when controlling the parallel. <table border="1"><tr><td>EM1</td><td>L</td><td>L</td><td>H</td><td>H</td></tr><tr><td>EM2</td><td>L</td><td>H</td><td>L</td><td>H</td></tr><tr><td>Mode</td><td>44.1</td><td>OFF</td><td>48</td><td>32</td></tr></table> (kHz) | EM1 | L | L | H | H | EM2 | L | H | L | H | Mode | 44.1 | OFF | 48 | 32 |
| EM1 | L | L | H | | | | | H | | | | | | | | | | | | | | |
| EM2 | L | H | L | | | | | H | | | | | | | | | | | | | | |
| Mode | 44.1 | OFF | 48 | | | | | 32 | | | | | | | | | | | | | | |
| 5 | RO | O | Data positive direction output of R ch. | | | | | | | | | | | | | | | | | | | |
| 6 | \overline{RO} | | Data reverse direction output of R ch. | | | | | | | | | | | | | | | | | | | |
| 7 | GNDA | — | Analog ground for R ch DA converter. | | | | | | | | | | | | | | | | | | | |
| 8 | GNDA | — | Analog ground for L ch DA converter. | | | | | | | | | | | | | | | | | | | |
| 9 | \overline{LO} | O | Data reverse output of L ch. | 22 | ATT (MUTE) | I | Data input for attenuator when controlling the serial. Becomes muting terminal when controlling the parallel. Mute ON at "H". | | | | | | | | | | | | | | | |
| 10 | LO | | Data positive output of L ch. | | | | | | | | | | | | | | | | | | | |
| 11 | VDA | — | Analog power supply for L ch DA converter. | 23 | OSCE | I* | System clock control. Stop the system clock at "L". | | | | | | | | | | | | | | | |
| 12 | GNDX | — | Ground of oscillating section. | | | | | | | | | | | | | | | | | | | |
| 13 | XI | I | Crystal oscillating circuit input. | | | | | | | | | | | | | | | | | | | |
| 14 | XO | O | Crystal oscillating circuit output. | 24 | \overline{RESET} | I* | Reset terminal. Reset the $\Sigma \Delta$ circuit at "L" and attenuate data becomes 00 (HEX). | | | | | | | | | | | | | | | |
| 15 | VDX | — | Power supply of oscillating section. | | | | | | | | | | | | | | | | | | | |
| 16 | GND | — | Ground of logic section. | 25 | DATA | I | Data input. | | | | | | | | | | | | | | | |
| 17 | C | I* | Clock selection. "L" : 256fs , "H" : 384fs | 26 | BCK | | Bit clock input. | | | | | | | | | | | | | | | |
| 18 | LZ | O | Digital zero detection output of L ch. | 27 | LRCK | | LR clock input (L ch data at "H"). | | | | | | | | | | | | | | | |
| 19 | MCK | | System clock output. | 28 | VDD | | — | Power supply of the logic section. | | | | | | | | | | | | | | |

I*: Input terminals with pull-up resistor.



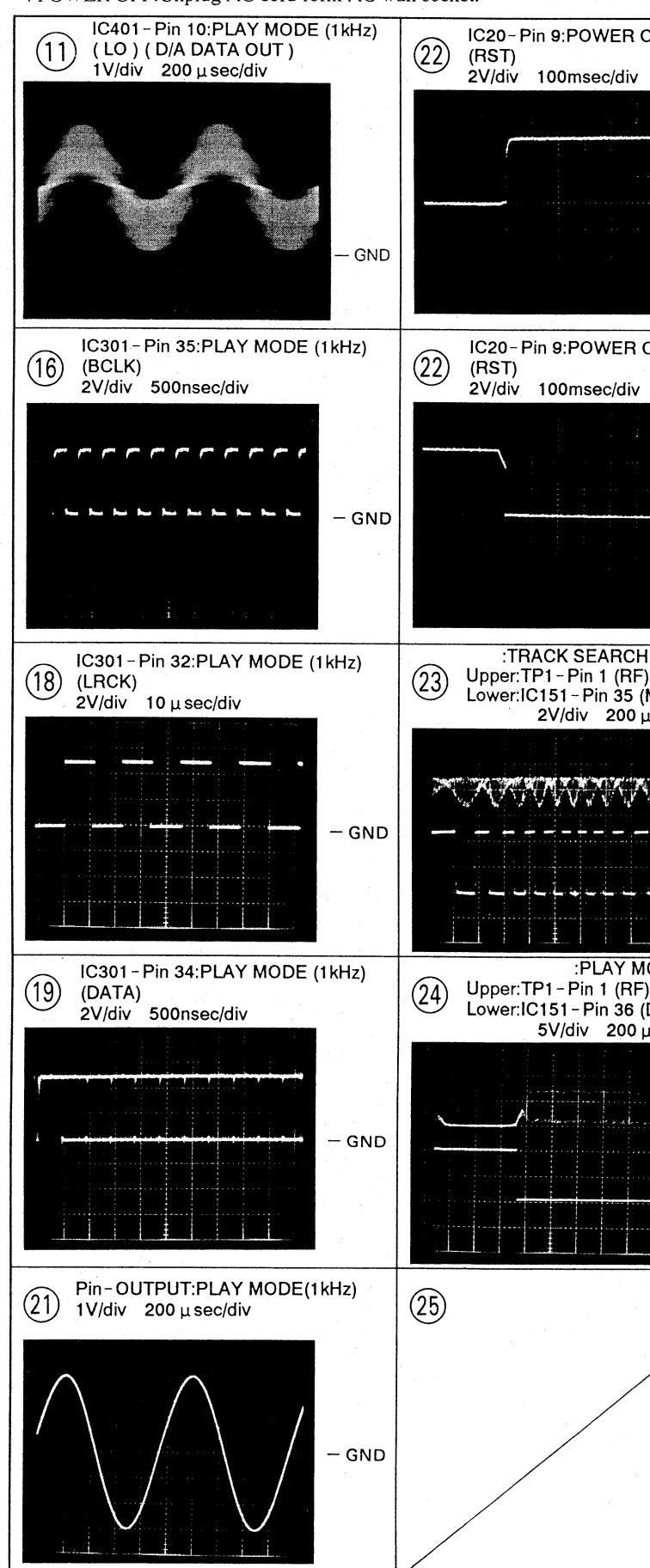
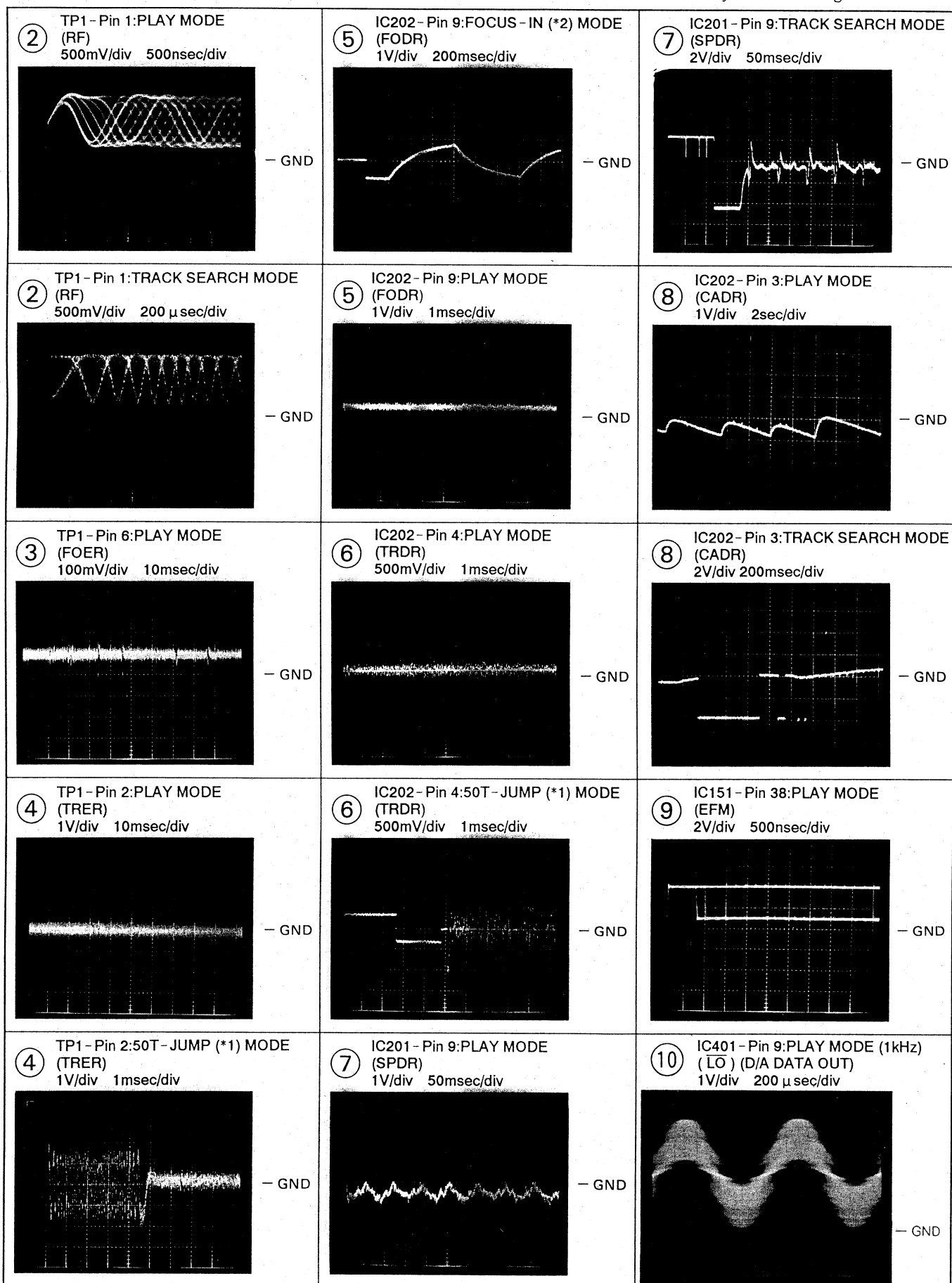
5. SCHEMATIC DIAGRAM

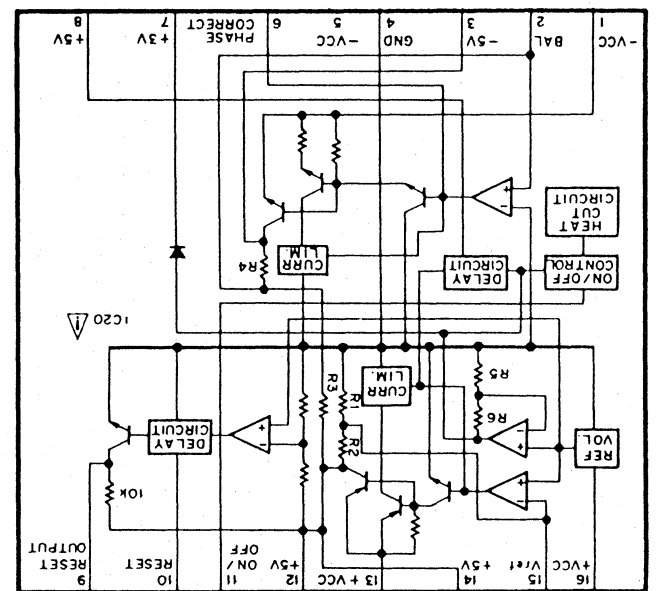
5.1 Waveforms

Note: The encircled numbers denote measuring in the schematic diagram.

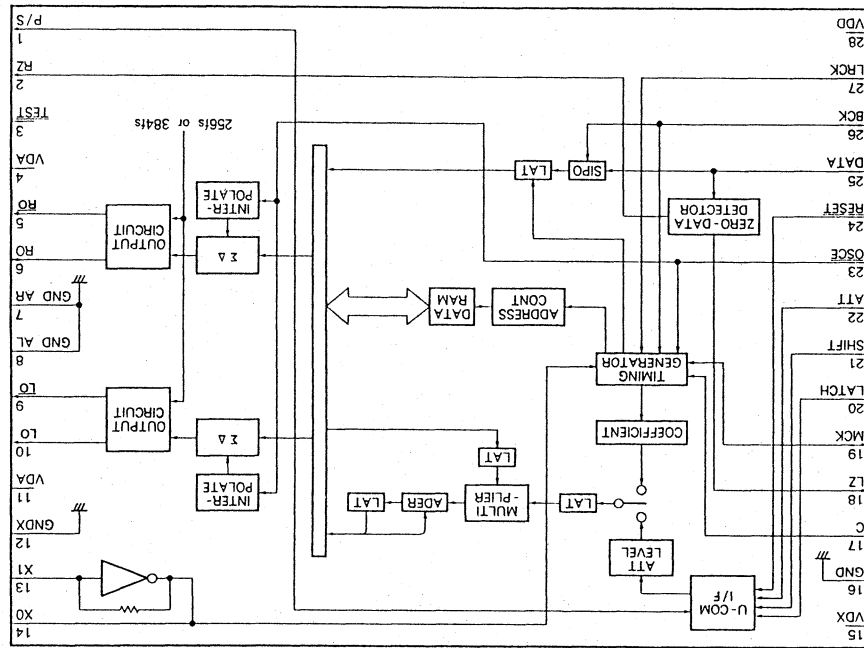
*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.

*3 POWER ON: Plug AC cord into AC wall socket.
*4 POWER OFF: Unplug AC cord from AC wall socket.

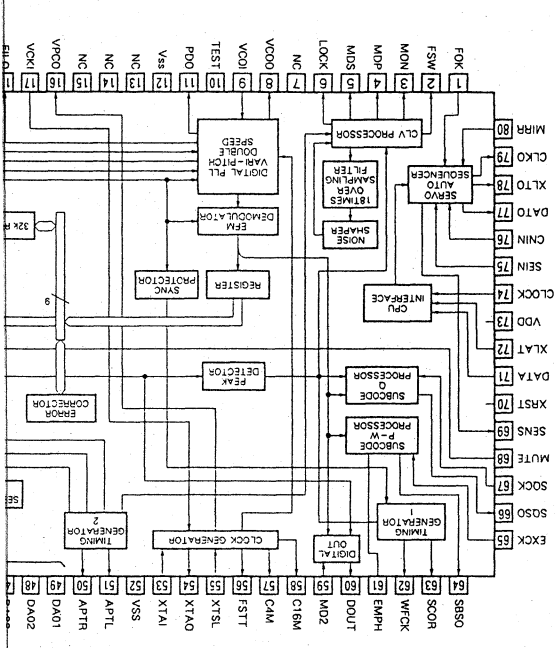




IC20:M5298P



IC401:PD2026A



IC301:CXD2500AQ

● IC BLOCK DIAGRAMS



1. RESISTORS :

Indicated in Ω , 1/4W, 1/6W and 1/8W, $\pm 5\%$ tolerance unless otherwise noted k; k Ω , M; M Ω , (F); $\pm 1\%$, (G); $\pm 2\%$, (K); $\pm 10\%$, (M); $\pm 20\%$ tolerance.

2. CAPACITORS :

Indicated in capacity(μ F)/voltage(V)unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

 ;DC voltage(V)at play state.
 mA ;DC current at play state.
 Value in () is DC current at stop state.

4. OTHERS :

➡ ;Signal route.
⊗ ;Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY

S801: POWER ON — OFF
S802: EJECT

SERVO MECHANISM ASSEMBLY

INSIDE SWITCH
LOADING BOARD ASSEMBLY

S601 : LPS1

S602 : LPS2
SELECT BOARD ASSEMBLY

S603 : MZS1

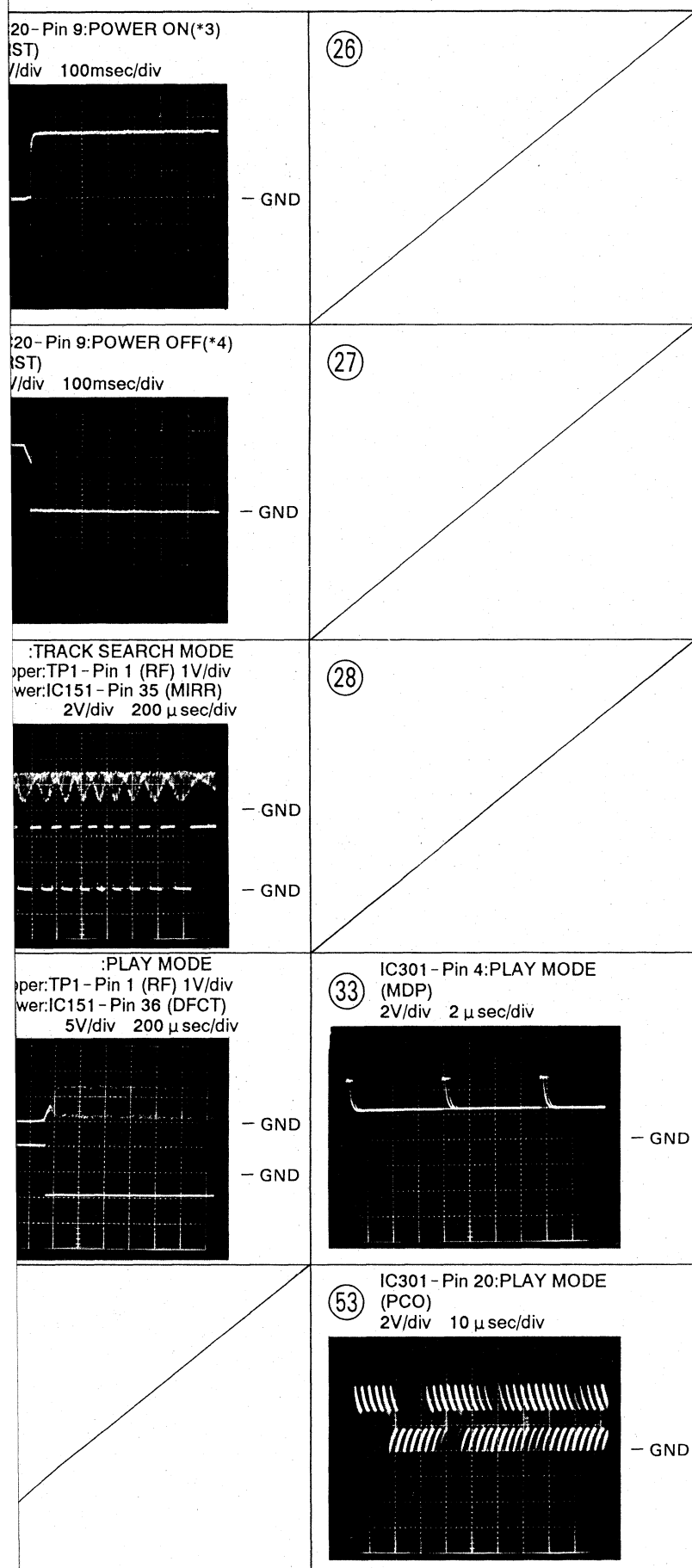
S604 : MZS2
S605 : DCHM

S606 : DCNT

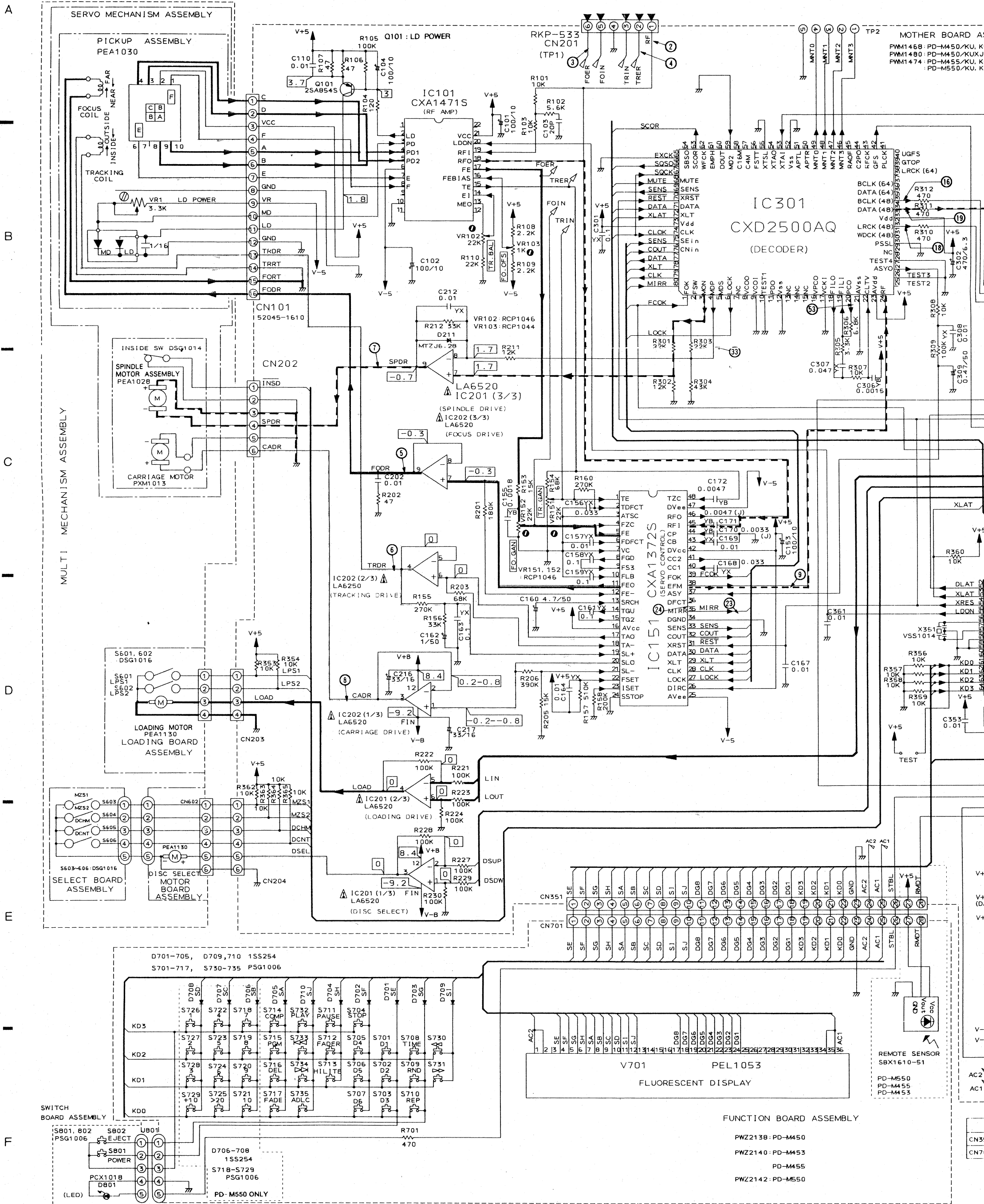
FUNCTION BOARD ASSEMBLY
(PD - M550 TYPE)

FUNCTION BOARD ASSEMBLY
(PD- M455 ,PD- M453 AND PD- M450 TYPES)

S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI- LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S730 : <◀> } MANUAL SEARCH
S731 : ◀◀>> }
S732 : PLAY
S733 : [◀◀>>] } TRACK SEARCH
S734 : ◀◀>> }
S735 : ADLC



5.2 SCHEMATIC DIAGRAM



- :Focus servo loop
- - - -:Signal route
- ~~~~~:Tracking servo loop
- ~~~~~:Carriage servo loop
- ~~~~~:Disc select motor route
- :Loading motor route
- - - -:Spindle motor route
- ▶:Measurement point

6. P. C. BOARDS CONNECTION DIAGRAM

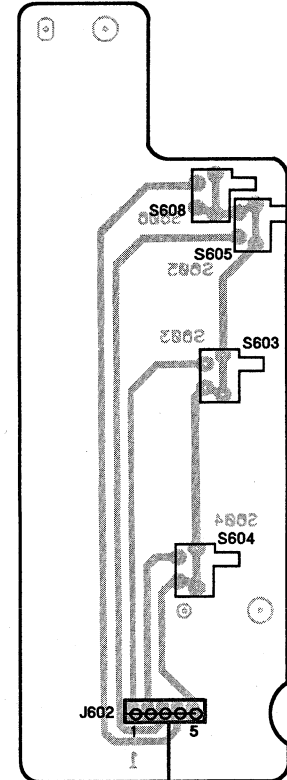
A

B

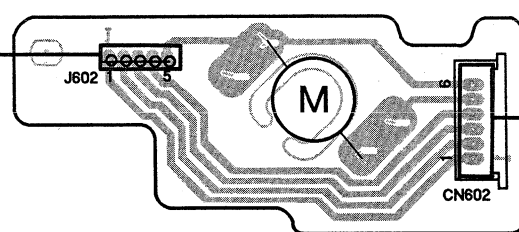
C

D

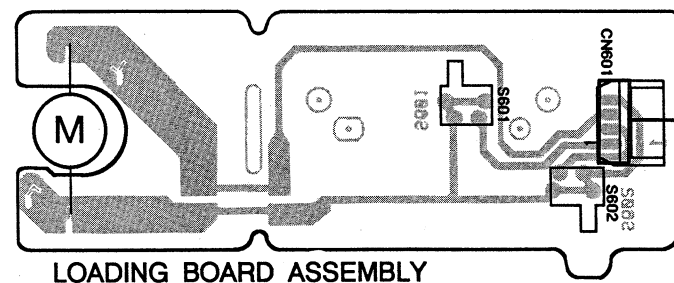
SELECT BOARD ASSEMBLY



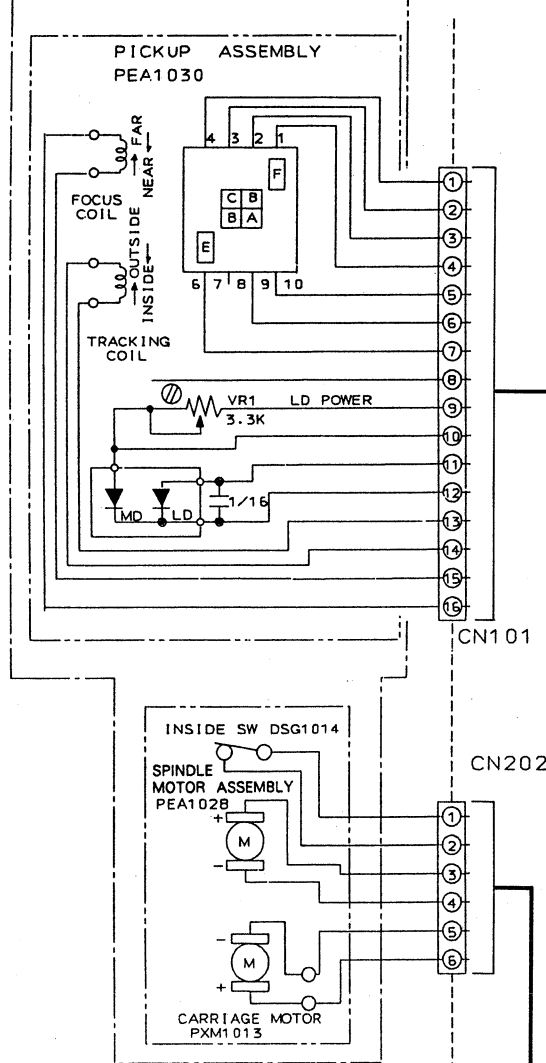
MOTOR BOARD ASSEMBLY



LOADING BOARD ASSEMBLY

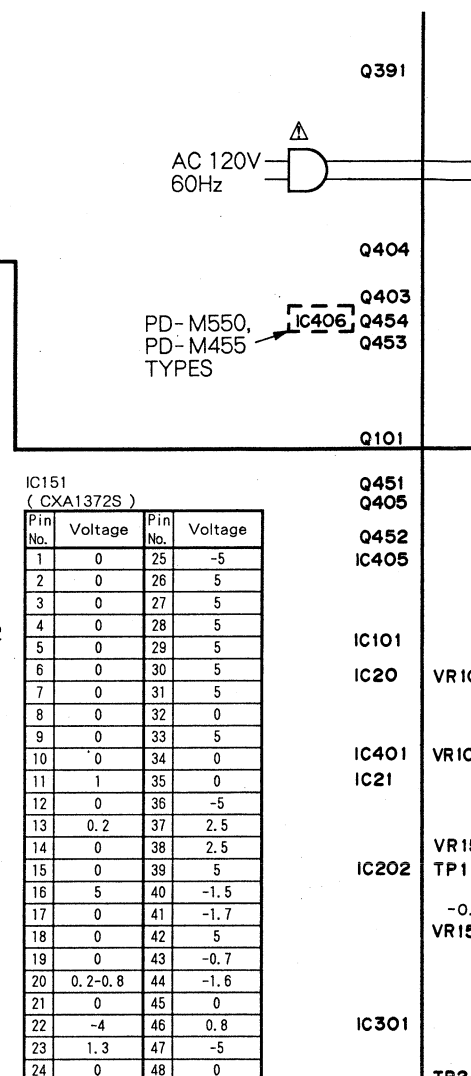


SERVO MECHANISM ASSEMBLY

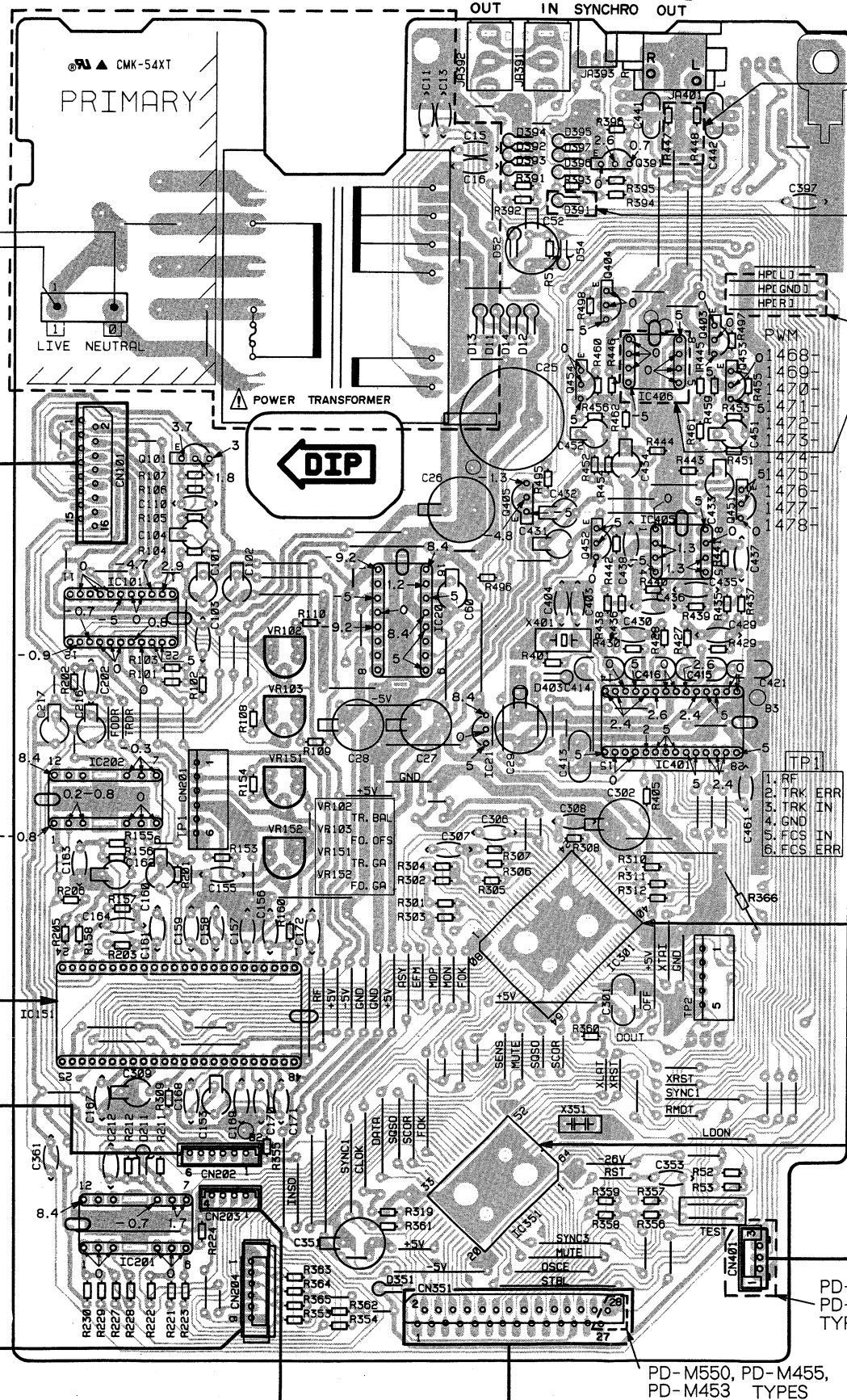


MOTHER BOARD ASSEMBLY

| | KU | KUXJS |
|---------|---------|---------|
| PD-M550 | PWM1474 | PWM1483 |
| PD-M455 | PWM1472 | PWM1482 |
| PD-M450 | PWM1468 | PWM1480 |



POWER SUPPLY SECTION For KU TYPE



| | |
|---------|------------|
| PD-M550 | R447, R448 |
| PD-M455 | USED |
| PD-M453 | SHORT |
| PD-M450 | (JUMPER) |

| | |
|---------|------|
| PD-M550 | D391 |
| PD-M455 | USED |
| PD-M453 | |
| PD-M450 | OPEN |

PD-M550,
PD-M455
TYPES

| Pin No. | Voltage | Pin No. | Voltage |
|---------|---------|---------|---------|
| 1 | 5 | 41 | 2.5 |
| 2 | 2.1 | 42 | 5 |
| 3 | 5 | 43 | 2.5 |
| 4 | 2.6 | 44 | 0 |
| 5 | 2.2 | 45 | 5 |
| 6 | 5 | 46 | 4.4 |
| 7 | 0 | 47 | 0 |
| 8 | 5 | 48 | 0 |
| 9 | 0 | 49 | 0-0.3 |
| 10 | 0 | 50 | 1.2 |
| 11 | 2.1 | 51 | 1.2 |
| 12 | 0 | 52 | 0 |
| 13 | 1 | 53 | 2.5 |
| 14 | 0.9-1.3 | 54 | 2.5 |
| 15 | 0 | 55 | 0 |
| 16 | 2 | 56 | 2.9 |
| 17 | 0 | 57 | 2.5 |
| 18 | 2.5 | 58 | 2.5 |
| 19 | 2.4 | 59 | 0 |
| 20 | 2.4 | 60 | 0 |
| 21 | 0 | 61 | 0 |
| 22 | 2.5 | 62 | 2.5 |
| 23 | 5 | 63 | 0 |
| 24 | 2.5 | 64 | 0 |
| 25 | 0.2 | 65 | 0 |
| 26 | 0 | 66 | 3.3-4.6 |
| 27 | 2.5 | 67 | 5 |
| 28 | 0 | 68 | 0 |
| 29 | 0 | 69 | 2.1-3 |
| 30 | 0 | 70 | 5 |
| 31 | 1.3-2.2 | 71 | 5 |
| 32 | 2.5 | 72 | 5 |
| 33 | 5 | 73 | 5 |
| 34 | 2.5 | 74 | 5 |
| 35 | 2.5 | 75 | 5 |
| 36 | 2.5 | 76 | 0 |
| 37 | 2.5 | 77 | 5 |
| 38 | 2.5 | 78 | 5 |
| 39 | 0 | 79 | 5 |
| 40 | 5 | 80 | 0 |

PD-M550,
PD-M455
TYPES

| | CN351, CN70 |
|---------|-------------|
| PD-M550 | 28 Pin |
| PD-M455 | |
| PD-M453 | |
| PD-M450 | 26 Pin |

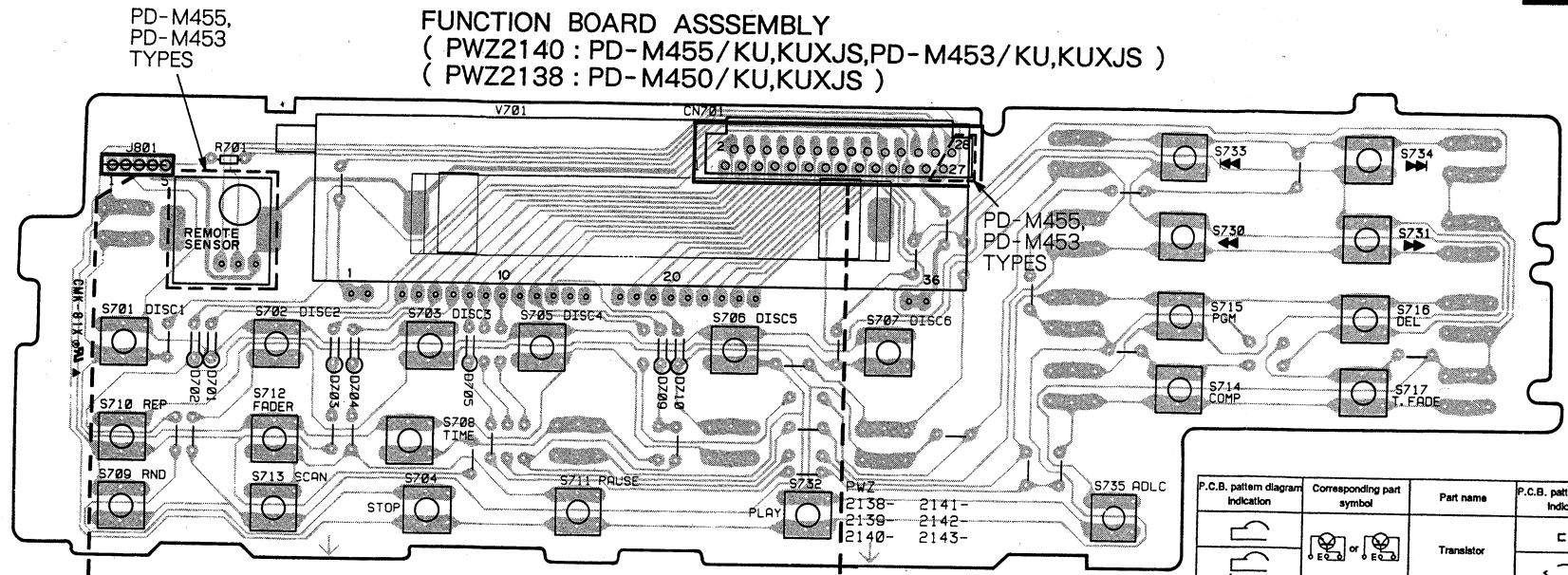
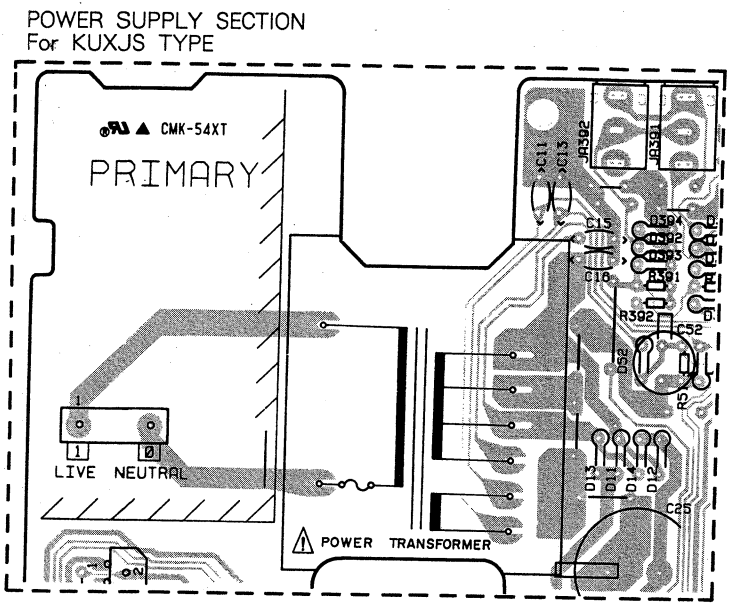
PD-M550, PD-M455,
PD-M453 TYPES

POWER
For KU:



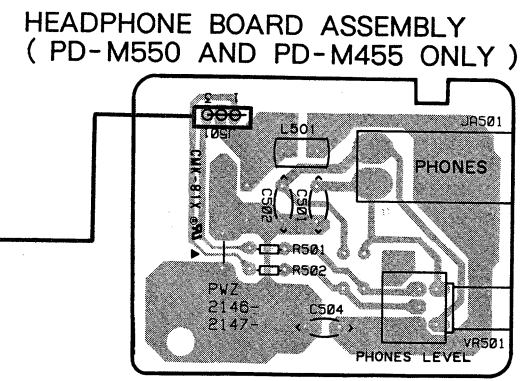
| | |
|---------|------------|
| PD-M550 | R447, R448 |
| PD-M455 | USED |
| PD-M453 | SHORT |
| PD-M450 | (JUMPER) |

| | |
|---------|------|
| PD-M550 | D391 |
| PD-M455 | USED |
| PD-M453 | |
| PD-M450 | OPEN |

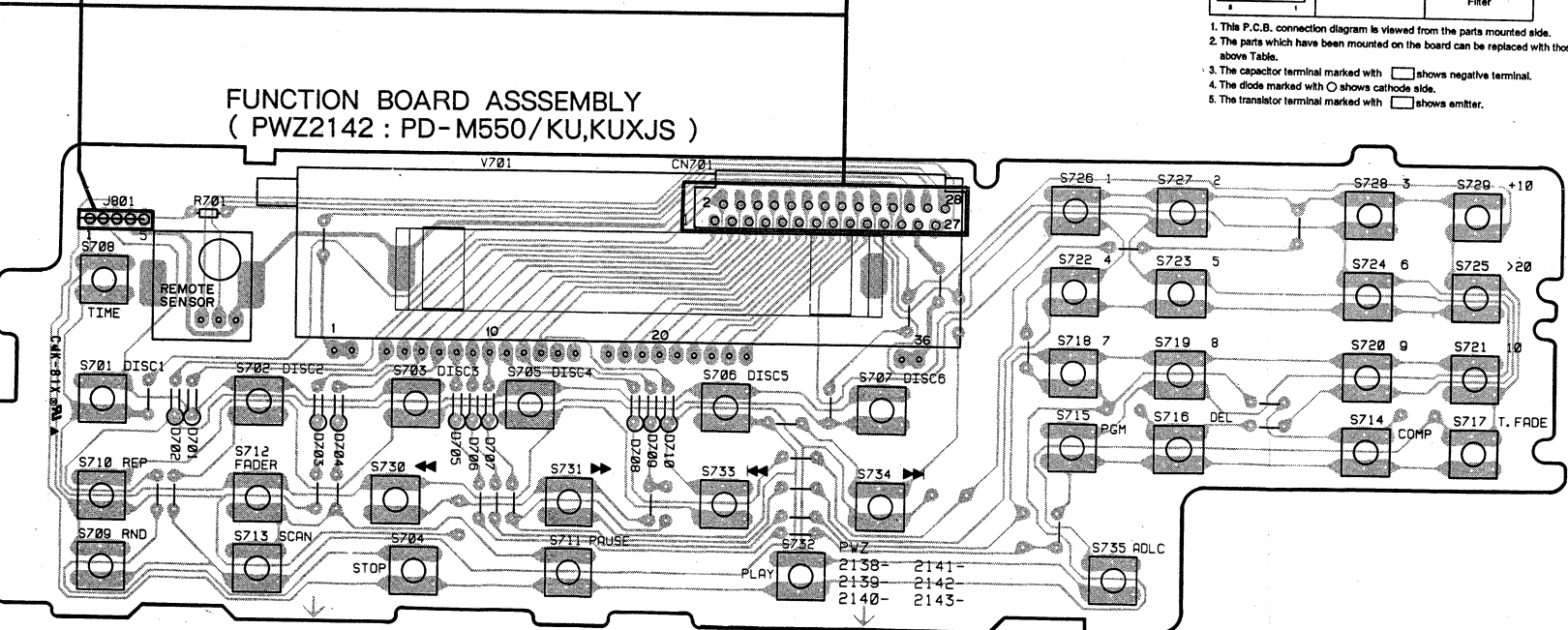
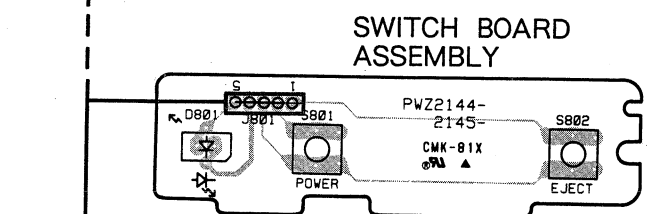


| 301 CXD2500AQ | | | |
|------------------|---------|---------|---------|
| n | Voltage | Pin No. | Voltage |
| 1 | 5 | 41 | 2.5 |
| 2 | 2.1 | 42 | 5 |
| 3 | 5 | 43 | 2.5 |
| 4 | 2.6 | 44 | 0 |
| 5 | 2.2 | 45 | 5 |
| 6 | 5 | 46 | 4.4 |
| 7 | 0 | 47 | 0 |
| 8 | 5 | 48 | 0 |
| 9 | 0 | 49 | 0-0.3 |
| 10 | 0 | 50 | 1.2 |
| 11 | 2.1 | 51 | 1.2 |
| 12 | 0 | 52 | 0 |
| 13 | 1 | 53 | 2.5 |
| 14 | 0.9-1.3 | 54 | 2.5 |
| 15 | 0 | 55 | 0 |
| 16 | 2 | 56 | 2.9 |
| 17 | 0 | 57 | 2.5 |
| 18 | 2.5 | 58 | 2.5 |
| 19 | 2.4 | 59 | 0 |
| 20 | 2.4 | 60 | 0 |
| 21 | 0 | 61 | 0 |
| 22 | 2.5 | 62 | 2.5 |
| 23 | 5 | 63 | 0 |
| 24 | 0.2 | 64 | 0 |
| 25 | 0 | 65 | 0 |
| 26 | 0 | 66 | 3.3-4.6 |
| 27 | 2.5 | 67 | 5 |
| 28 | 0 | 68 | 0 |
| 29 | 0 | 69 | 2.1-3 |
| 30 | 0 | 70 | 5 |
| 31 | 1.3-2.2 | 71 | 5 |
| 32 | 2.5 | 72 | 5 |
| 33 | 5 | 73 | 5 |
| 34 | 2.5 | 74 | 5 |
| 35 | 2.5 | 75 | 5 |
| 36 | 2.5 | 76 | 0 |
| 37 | 2.5 | 77 | 5 |
| 38 | 2.5 | 78 | 5 |
| 39 | 0 | 79 | 5 |
| 40 | 5 | 80 | 0 |

| IC351 (PD4323A) | | | |
|----------------------|------------|---------|---------|
| Pin No. | Voltage | Pin No. | Voltage |
| 1 | 5 | 33 | 5 |
| 2 | -24 | 34 | 3.5-4.7 |
| 3 | -24 | 35 | 5 |
| 4 | -24 | 36 | 0 |
| 5 | -24 | 37 | 5 |
| 6 | -24 | 38 | 5 |
| 7 | -24 | 39 | 0 |
| 8 | -24 | 40 | 0 |
| 9 | -24 | 41 | 0 |
| 10 | -24 | 42 | 0 |
| 11 | -26 | 43 | 0 |
| 12 | 0 | 44 | 0 |
| 13 | 0 | 45 | 0 |
| 14 | 5 | 46 | 0 |
| 15 | 5 | 47 | 0 |
| 16 | 5 | 48 | 0 |
| 17 | 0 | 49 | 0 |
| 18 | -26 | 50 | 5 |
| 19 | -5 | 51 | 0 |
| 20 | 1.2 | 52 | 5 |
| 21 | -7.7 | 53 | 5 |
| 22 | -6--10 | 54 | 5 |
| 23 | -4--7.5 | 55 | 5 |
| 24 | -4--7.5 | 56 | 2.5 |
| 25 | -9.5--16.2 | 57 | 2.5 |
| 26 | 5 | 58 | 0 |
| 27 | -26 | 59 | 0 |
| 28 | -13--20 | 60 | 5 |
| 29 | -16--20 | 61 | 0 |
| 30 | -13--16 | 62 | 0 |
| 31 | 5 | 63 | 0 |
| 32 | 5 | 64 | 0 |



| CN351, CN701 | |
|--------------|--------|
| PD-M550 | 28 Pin |
| PD-M455 | |
| PD-M453 | |
| PD-M450 | 26 Pin |



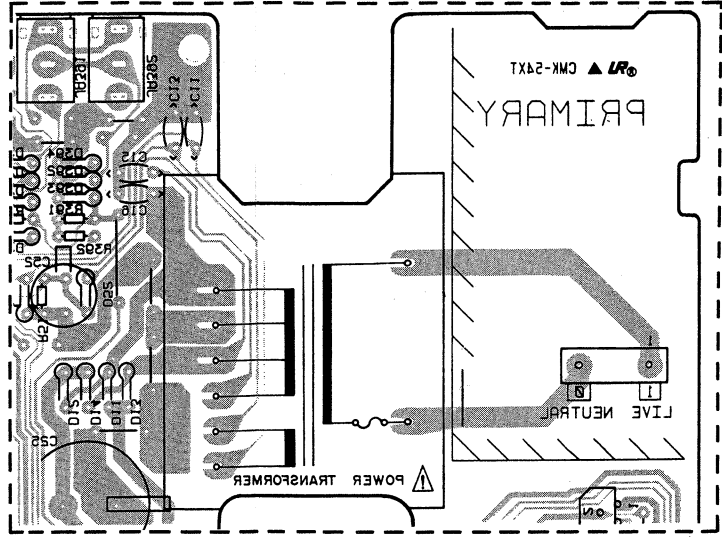
| P.C.B. pattern diagram Indication | Corresponding part symbol | Part name | P.C.B. pattern diagram Indication | Corresponding part symbol | Part name |
|--------------------------------------|------------------------------|-------------|---|---------------------------------------|---------------------|
| | | Transistor | | | Ceramic capacitor |
| | | FET | | | Mylar capacitor |
| | | Diode | | | Styro capacitor |
| | | | Electrolytic capacitor (Non polarized) | | |
| | | Zener diode | | Electrolytic capacitor (Noiseless) | |
| | | | Electrolytic capacitor (Polarized) | | |
| | | LED | | Electrolytic capacitor (Polarized) | |
| | | | Power capacitor | | |
| | | Varactor | | | Semi-fixed resistor |
| | | Tact switch | | | Resistor array |
| | | Inductor | | | Resistor |
| | | | | Coil | |
| | | Transformer | | Resonator | |
| | | | Thermistor | | |
| | | Filter | | | |

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

| | | | |
|----------------|-------------|------------|-----------------|
| -M450 (JUMPER) | -M453 SHORT | -M455 USED | -M550 R447,R448 |
|----------------|-------------|------------|-----------------|

| | | | |
|------------|------------|------------|------------|
| -M450 OPEN | -M453 USED | -M455 USED | -M550 D391 |
|------------|------------|------------|------------|

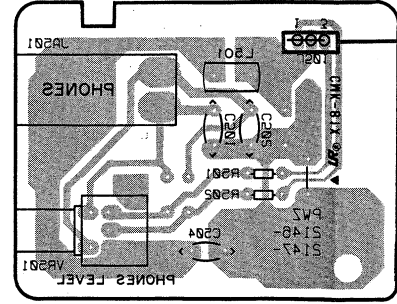
-M550,
-M455



| Pin No. | Voltage | Pin No. | Voltage |
|---------|---------|---------|---------|
| 1 | 5.2 | 1 | 5.2 |
| 2 | 5.2 | 2 | 5.2 |
| 3 | 5.2 | 3 | 5.2 |
| 4 | 5.2 | 4 | 5.2 |
| 5 | 5.2 | 5 | 5.2 |
| 6 | 5.2 | 6 | 5.2 |
| 7 | 5.2 | 7 | 5.2 |
| 8 | 5.2 | 8 | 5.2 |
| 9 | 5.2 | 9 | 5.2 |
| 10 | 5.2 | 10 | 5.2 |
| 11 | 5.2 | 11 | 5.2 |
| 12 | 5.2 | 12 | 5.2 |
| 13 | 5.2 | 13 | 5.2 |
| 14 | 5.2 | 14 | 5.2 |
| 15 | 5.2 | 15 | 5.2 |
| 16 | 5.2 | 16 | 5.2 |
| 17 | 5.2 | 17 | 5.2 |
| 18 | 5.2 | 18 | 5.2 |
| 19 | 5.2 | 19 | 5.2 |
| 20 | 5.2 | 20 | 5.2 |
| 21 | 5.2 | 21 | 5.2 |
| 22 | 5.2 | 22 | 5.2 |
| 23 | 5.2 | 23 | 5.2 |
| 24 | 5.2 | 24 | 5.2 |
| 25 | 5.2 | 25 | 5.2 |
| 26 | 5.2 | 26 | 5.2 |
| 27 | 5.2 | 27 | 5.2 |
| 28 | 5.2 | 28 | 5.2 |
| 29 | 5.2 | 29 | 5.2 |
| 30 | 5.2 | 30 | 5.2 |
| 31 | 5.2 | 31 | 5.2 |
| 32 | 5.2 | 32 | 5.2 |
| 33 | 5.2 | 33 | 5.2 |
| 34 | 5.2 | 34 | 5.2 |
| 35 | 5.2 | 35 | 5.2 |

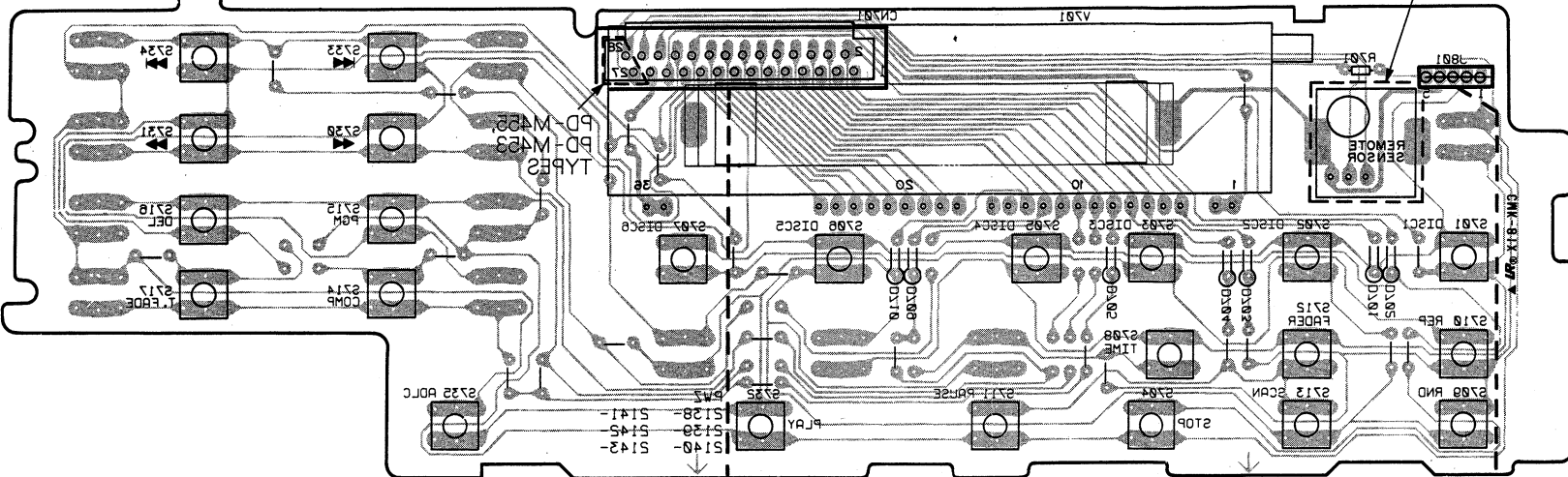
| Pin No. | Voltage | Pin No. | Voltage |
|---------|---------|---------|---------|
| 1 | 5.2 | 1 | 5.2 |
| 2 | 5.2 | 2 | 5.2 |
| 3 | 5.2 | 3 | 5.2 |
| 4 | 5.2 | 4 | 5.2 |
| 5 | 5.2 | 5 | 5.2 |
| 6 | 5.2 | 6 | 5.2 |
| 7 | 5.2 | 7 | 5.2 |
| 8 | 5.2 | 8 | 5.2 |
| 9 | 5.2 | 9 | 5.2 |
| 10 | 5.2 | 10 | 5.2 |
| 11 | 5.2 | 11 | 5.2 |
| 12 | 5.2 | 12 | 5.2 |
| 13 | 5.2 | 13 | 5.2 |
| 14 | 5.2 | 14 | 5.2 |
| 15 | 5.2 | 15 | 5.2 |
| 16 | 5.2 | 16 | 5.2 |
| 17 | 5.2 | 17 | 5.2 |
| 18 | 5.2 | 18 | 5.2 |
| 19 | 5.2 | 19 | 5.2 |
| 20 | 5.2 | 20 | 5.2 |
| 21 | 5.2 | 21 | 5.2 |
| 22 | 5.2 | 22 | 5.2 |
| 23 | 5.2 | 23 | 5.2 |
| 24 | 5.2 | 24 | 5.2 |
| 25 | 5.2 | 25 | 5.2 |
| 26 | 5.2 | 26 | 5.2 |
| 27 | 5.2 | 27 | 5.2 |
| 28 | 5.2 | 28 | 5.2 |
| 29 | 5.2 | 29 | 5.2 |
| 30 | 5.2 | 30 | 5.2 |
| 31 | 5.2 | 31 | 5.2 |
| 32 | 5.2 | 32 | 5.2 |
| 33 | 5.2 | 33 | 5.2 |
| 34 | 5.2 | 34 | 5.2 |
| 35 | 5.2 | 35 | 5.2 |

(PD-M550 AND PD-M455 ONLY)
HEADPHONE BOARD ASSEMBLY

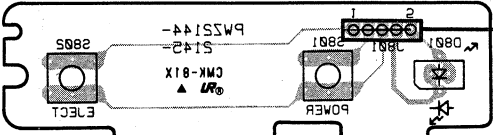


| | | |
|---------|--------|-------------|
| PD-M450 | 28 Pin | CN381 CN101 |
| PD-M453 | 28 Pin | |
| PD-M455 | 28 Pin | |
| PD-M550 | 28 Pin | |

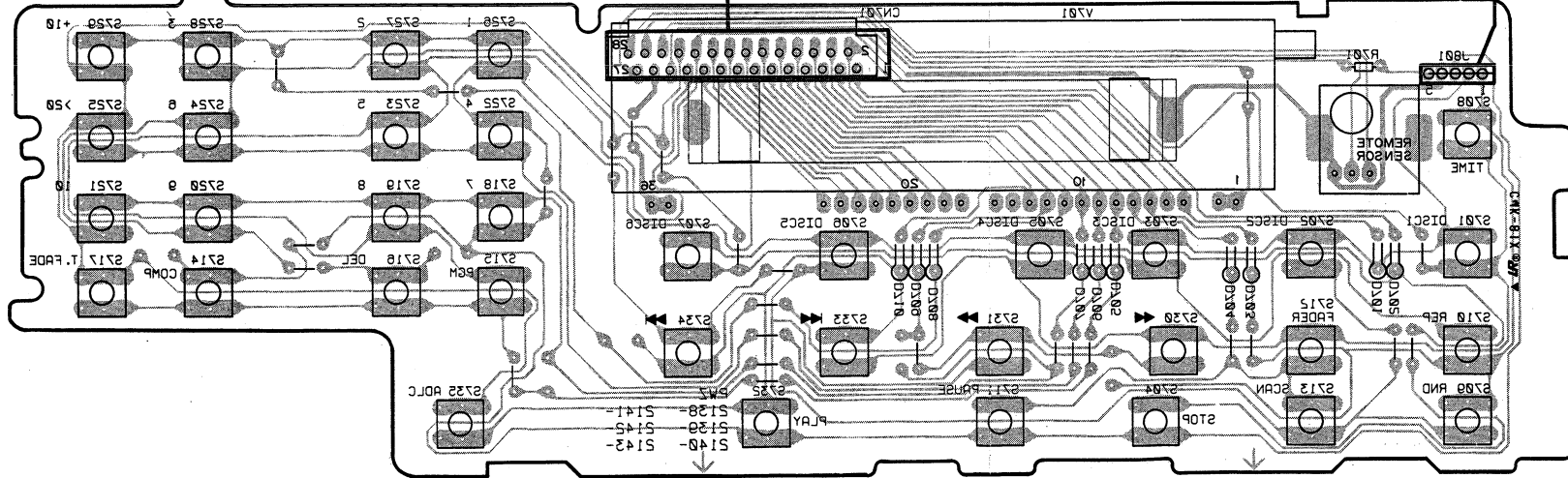
FUNCTION BOARD ASSEMBLY
(PWZ140 : PD-M455\KU,KUX12,PD-M453\KU,KUX12)
(PWZ138 : PD-M450\KU,KUX12)



SWITCH BOARD
ASSEMBLY



FUNCTION BOARD ASSEMBLY
(PWZ145 : PD-M550\KU,KUX12)



This P.C.B. connection diagram is viewed from the foil side.

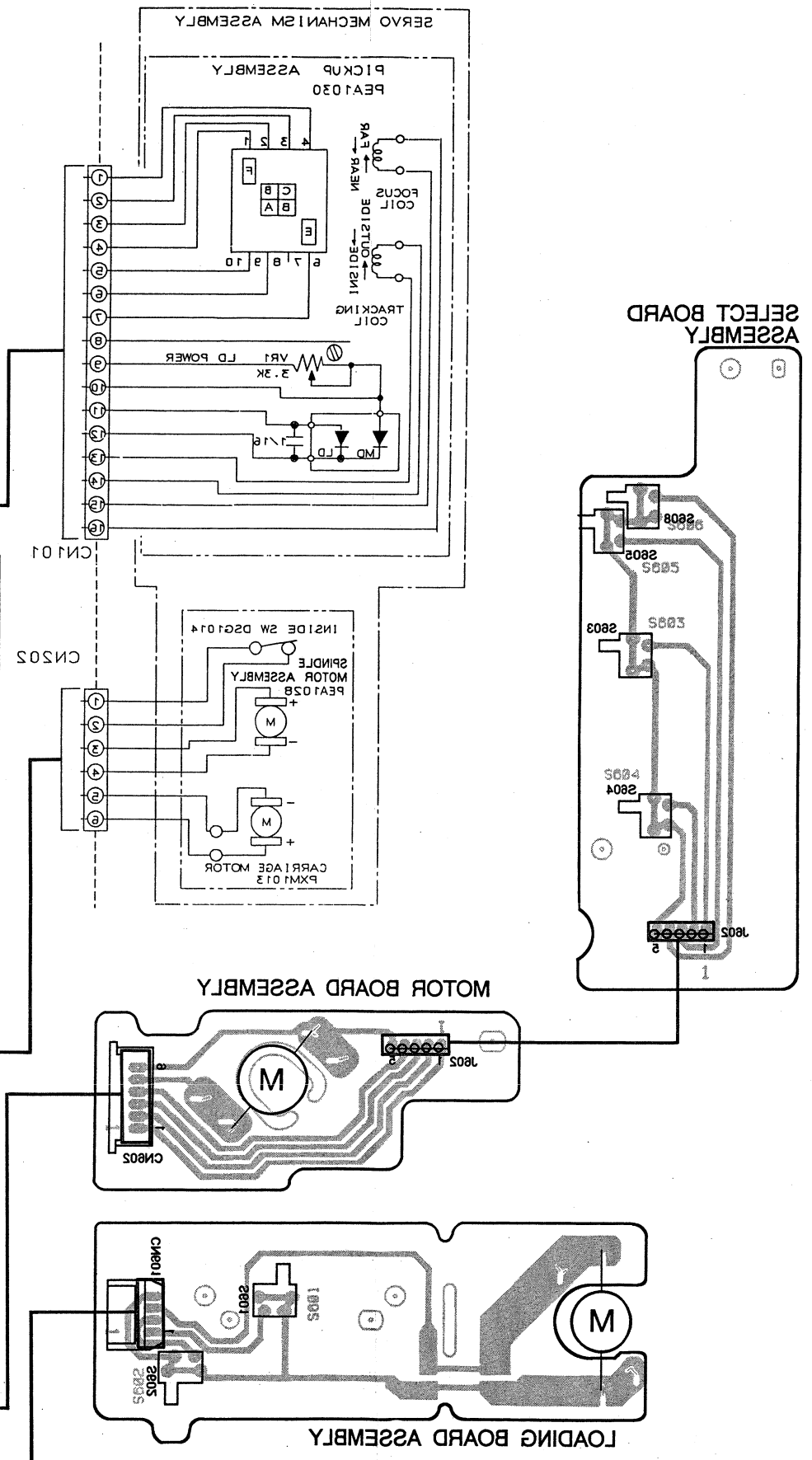
A

B

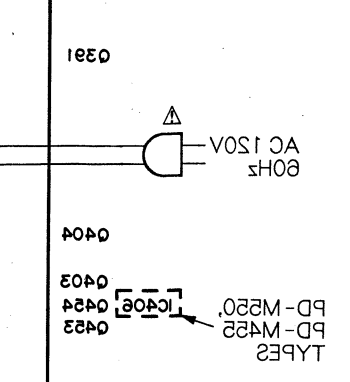
C

D

E. P. C. BOARDS CONNECTION DIAGRAM



| PD-M450 | PWM1480 | KU | KUX12 |
|---------|---------|---------|---------|
| PD-M450 | PWM1480 | PWM1474 | PWM1483 |
| PD-M453 | PWM1475 | | PWM1485 |
| PD-M450 | PWM1468 | | PWM1480 |



| | | | |
|-----|-------|------|----|
| TPS | IC301 | 0 | 48 |
| | | -2 | 49 |
| | | 0 | 50 |
| | | -1.8 | 44 |
| | | -1.0 | 43 |
| | | 2 | 45 |
| VR1 | | -1.7 | 41 |
| TP | IC505 | -1.2 | 40 |
| | | 2 | 38 |
| | | 2.5 | 38 |
| | | 2.5 | 37 |
| VR | | -2 | 36 |
| | IC51 | 0 | 35 |
| | IC401 | 0 | 34 |
| | | 2 | 33 |
| VR1 | | 0 | 32 |
| | | 2 | 30 |
| | IC50 | 2 | 28 |
| | IC101 | 2 | 27 |
| | | 2 | 26 |
| | | 2 | 25 |
| | | 2 | 24 |
| | | 2 | 23 |
| | | 2 | 22 |
| | | 2 | 21 |
| | | 2 | 20 |
| | | 2 | 19 |
| | | 2 | 18 |
| | | 2 | 17 |
| | | 2 | 16 |
| | | 2 | 15 |
| | | 2 | 14 |
| | | 2 | 13 |
| | | 2 | 12 |
| | | 2 | 11 |
| | | 2 | 10 |
| | | 2 | 9 |
| | | 2 | 8 |
| | | 2 | 7 |
| | | 2 | 6 |
| | | 2 | 5 |
| | | 2 | 4 |
| | | 2 | 3 |
| | | 2 | 2 |
| | | 2 | 1 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | 0 |
| | | 2 | |

7. P. C. B's PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by “⊙” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 $\Omega \rightarrow 56 \times 10^1 \rightarrow 561 \dots\dots\dots RD1/4PS \boxed{5} \boxed{6} \boxed{1} J$

47k $\Omega \rightarrow 47 \times 10^3 \rightarrow 473$ RD1/4PS

| | | |
|---|---|---|
| 4 | 7 | 3 |
|---|---|---|

 J

0.5 $\Omega \rightarrow 0R5$ RN2H 0 R 5 K

$1\Omega \rightarrow 010 \dots \dots \dots RSIP \begin{array}{|c|c|c|} \hline 0 & 1 & 0 \\ \hline \end{array} K$

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

$$5.62k\Omega \rightarrow 562 \times 10^1 \rightarrow 5621 \dots\dots\dots RN1/4SR \boxed{5}\boxed{6}\boxed{2}\boxed{1}F$$

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|---|------------|----------------------------|-------------|------|-----------|----------------------|-------------|
| ● MOTHER BOARD ASSEMBLY | | | | | | | |
| (PWM1474 For PD - M550 and PD - M455) | | | | | | | |
| (PWM1472 For PD - M453) | | | | | | | |
| (PWM1468 For PD - M450) | | | | | | | |
| SEMICONDUCTORS | | | | | | | |
| | IC101 | PRE AMP IC | CXA1471S | | C153 | ELECTR. CAPACITOR | CEAS101M10 |
| | IC151 | SERVO IC | CXA1372S | | C155 | CERAMIC CAPACITOR | CKCYB182K50 |
| △ | IC20 | REGULATOR IC | M5298P | | C156 | CERAMIC CAPACITOR | CGCYX333K25 |
| △ | IC201, 202 | POWER OP-AMP, IC | LA6520 | | C157 | CERAMIC CAPACITOR | CGCYX103K25 |
| | IC21 | REGULATOR, IC | NJM2930-L05 | | C158, 159 | CERAMIC CAPACITOR | CGCYX104K25 |
| | IC301 | EFM DEMODULATION IC | CXD2500AQ | | C16 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | IC351 | MICROCOMPUTER, IC | PD4323A | | C160 | ELECTR. CAPACITOR | CEAS4R7M50 |
| | IC401 | D/A CONVERTER, IC | PD2026A | | C161 | CERAMIC CAPACITOR | CGCYX104K25 |
| | IC405 | OP-AMP IC | NJM4558D-D | | C162 | ELECTR. CAPACITOR | CEAS010M50 |
| | IC406 | OP-AMP IC (PWM1474 only) | BA15218 | | C163 | CERAMIC CAPACITOR | CGCYX104K25 |
| | Q101 | TRANSISTOR | 2SA854S | | C164 | CERAMIC CAPACITOR | CGCYX103K25 |
| | Q391 | TRANSISTOR | 2SC1740S | | C167 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | Q403, 404 | TRANSISTOR | 2SD2144S | | C168 | CERAMIC CAPACITOR | CGCYX333K25 |
| | Q405 | TRANSISTOR | DTC124ES | | C169 | CERAMIC CAPACITOR | CGCYX103K25 |
| | Q451, 452 | TRANSISTOR | DTA124ES | | C170 | CERAMIC CAPACITOR | CKCYB332K50 |
| | Q453, 454 | TRANSISTOR | 2SB1296 | | C171, 172 | CERAMIC CAPACITOR | CKCYB472K50 |
| △ | D11-14 | DIODE | 11ES2 | | C202 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | D211 | ZENNER DIODE | MTZJ6. 2B | | C21 | MYLOR FILM CAPACITOR | CQMA104K50 |
| | D351 | DIODE | 1SS254 | | C212 | CERAMIC CAPACITOR | CGCYX103K25 |
| | D391 | DIODE | 1SS254 | | C216, 217 | ELECTR. CAPACITOR | CEAS330M16 |
| | | (PWM1474 and PWM1472 only) | | | C25 | ELECTR. CAPACITOR | CEAS332M16 |
| | D392-397 | DIODE | 1SS254 | | C26 | ELECTR. CAPACITOR | CEAS102M16 |
| | D403 | DIODE | 1SS254 | | C27 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| △ | D52 | DIODE | 11ES2 | | C28 | ELECTR. CAPACITOR | CEAS101M10 |
| | D54 | ZENNER DIODE | MTZJ18B | | C29 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| CAPACITORS | | | | | | | |
| | C101, 102 | ELECTR. CAPACITOR | CEAS101M10 | | C301 | CERAMIC CAPACITOR | CGCYX104K25 |
| | C103 | CERAMIC CAPACITOR | CCCCH200J50 | | C302 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| | C104 | ELECTR. CAPACITOR | CEAS101M10 | | C306 | CERAMIC CAPACITOR | CKCYB152K50 |
| | C11, 110 | CERAMIC CAPACITOR | CKCYF103Z50 | | C307 | CERAMIC CAPACITOR | CGCYX473K25 |
| | C13, 15 | CERAMIC CAPACITOR | CKCYF103Z50 | | C308 | CERAMIC CAPACITOR | CGCYX103K25 |
| | | | | | C309 | ELECTR. CAPACITOR | CEASR47M50 |
| | | | | | C351 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| | | | | | C353, 361 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | | | | | C397 | MYLOR FILM CAPACITOR | CQMA104K50 |
| | | | | | C403 | CERAMIC CAPACITOR | CCCCH120J50 |
| | | | | | C404 | CERAMIC CAPACITOR | CCCCH220J50 |
| | | | | | C413-416 | MYLOR FILM CAPACITOR | CQMA104K50 |
| | | | | | C421 | MYLOR FILM CAPACITOR | CQMA103K50 |
| | | | | | C429, 430 | CERAMIC CAPACITOR | CCCCH390J50 |
| | | | | | C431, 432 | ELECTR. CAPACITOR | CEAS330M16 |

| Mark | No. | Description | Part No. |
|------|-----------|----------------------|-------------|
| | C433, 434 | ELECTR. CAPACITOR | CEAS220M25 |
| | C435-438 | CERAMIC CAPACITOR | CCCCH390J50 |
| | C441, 442 | MYLOR FILM CAPACITOR | CQMA152J50 |
| | C451, 452 | ELECTR. CAPACITOR | CEAS4R7M50 |
| | C461 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C52 | ELECTR. CAPACITOR | CEAS101M35 |
| | C60 | ELECTR. CAPACITOR | CEAS010M50 |

RESISTORS

| | | |
|------------|-----------------|-------------|
| VR102 | VR(22k) | VRTB6VS223 |
| VR103 | VR(1k) | VRTB6VS102 |
| VR151, 152 | VR(22k) | VRTB6VS223 |
| | Other resistors | RD1/6PM□□□J |

OTHERS

| | | |
|------------|----------------------------|------------|
| X351 | CERAMIC RESONATOR | VSS1014 |
| X401 | XTAL RES (OSC) | PSS1006 |
| CN101 | CONNECTOR | 52045-1610 |
| CN351 | CONNECTOR | 9602S-28C |
| | (PWM1474 and PWM1472 only) | |
| CN351 | CONNECTOR (PWM1468 only) | 9602S-26C |
| CN401 | 3P JUMPER CONNECTOR | Non supply |
| | (PWM1474 only) | |
| JA391, 392 | JACK/12V | PKN1004 |
| | (CONTROL (IN, OUT)) | |
| JA393 | JACK (CD-DECK SYNCHRO) | PKN1005 |
| JA401 | JACK (LINE OUT (L, R)) | PKB1009 |

LOADING BOARD ASSEMBLY

SWITCHES

| | | |
|-----------|------------------|---------|
| S601, 602 | PUSH SWITCH | DSG1016 |
| | (LPS (1, 2)) | |

SELECT BOARD ASSEMBLY

SWITCHES

| | | |
|----------|------------------------------|---------|
| S603-606 | PUSH SWITCH | DSG1016 |
| | (MZS (1, 2), DCHM, DCNT) | |

MOTOR BOARD ASSEMBLY

There is not supplied parts in this assembly.

◎ FUNCTION BOARD ASSEMBLY

- (PWZ2142 For PD - M550)
 (PWM2140 For PD - M455 and PD - M453)
 (PWM2138 For PD - M450)

SEMICONDUCTORS

| | | |
|-----------|----------------------|--------|
| D701-705 | DIODE | 1SS254 |
| D706-708 | DIODE (PWZ2142 only) | 1SS254 |
| D709, 710 | DIODE | 1SS254 |

| Mark | No. | Description | Part No. |
|------|-----|-------------|----------|
|------|-----|-------------|----------|

SWITCHES

| | | |
|----------|--|---------|
| S701-735 | SWITCH (PWZ2142 only) | PSG1006 |
| | (DISC1, DISC2, DISC3, STOP, DISC4, DISC5, DISC6, TIME, RANDOM PLAY, REPEAT, PAUSE, AUTO FADER, HI-LITE SCAN, COMPU PGM, PGM, DELETE, TIME FADE, 7-10, 4-6, ≥20, 1-3, +10, MANUAL SEARCH(<<1, >>), PLAY, TRACK SEARCH(<<<1, >>>), ADLC) | |

| | | |
|----------|---|---------|
| S701-717 | SWITCH | PSG1006 |
| | (PWZ2140 and PWZ2138 only) | |
| | (DISC1, DISC2, DISC3, STOP, DISC4, DISC5, DISC6, TIME, RANDOM PLAY, REPEAT, PAUSE, AUTO FADER, HI-LITE SCAN, COMPU PGM, PGM, DELETE, TIME FADE) | |

| | | |
|----------|---|---------|
| S730-735 | SWITCH | PSG1006 |
| | (PWZ2140 and PWZ2138 only) | |
| | (MANUAL SEARCH(<<1, >>), PLAY, TRACK SEARCH(<<<1, >>>), ADLC) | |

RESISTOR

| | | |
|------|----------------------|-------------|
| R701 | CARBON FILM RESISTOR | RD1/6PM471J |
|------|----------------------|-------------|

OTHERS

| | | |
|-------|------------------------------|------------|
| CN701 | CONNECTOR | 9602S-28F |
| | (PWZ2142 and PWZ2140 only) | |
| CN701 | CONNECTOR | 9602S-26F |
| | (PWZ2138 only) | |
| V701 | FL INDICATOR TUBE | PEL1053 |
| | REMOTE SENSOR | SBX1610-51 |
| | (PWZ2142 only) | |

SWITCH BOARD ASSEMBLY

SEMICONDUCTOR

| | | |
|------|-----|---------|
| D801 | LED | PCX1018 |
|------|-----|---------|

SWITCHES

| | | |
|-----------|------------------|---------|
| S801, 802 | SWITCH | PSG1006 |
| | (POWER, EJECT) | |

HEADPHONE BOARD ASSEMBLY (For PD - M550 and PD - M455 only)

COIL

| | | |
|------|-----------------|---------|
| L501 | RADIAL INDUCTOR | LFAR22M |
|------|-----------------|---------|

CAPACITORS

| | | |
|-----------|-------------------|-------------|
| C501, 502 | CERAMIC CAPACITOR | CKCYF103K50 |
| C504 | CERAMIC CAPACITOR | CKCYF473Z50 |

RESISTORS

| | | |
|-----------|----------------------|-------------|
| VR501 | VARIABLE RESISTOR | PCS1003 |
| R501, 502 | CARBON FILM RESISTOR | RD1/6PM470J |

OTHERS

| | | |
|-------|-----------------|---------|
| JA501 | JACK (PHONES) | RKN1002 |
|-------|-----------------|---------|

8. ADJUSTMENTS

8.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

| Step | Item | Test Point | Adjustment Location |
|------|--|---|---|
| 1 | Focus offset adjustment | TP1, Pin 6(FCS. ERR) | VR103(FCS. OFS) |
| 2 | Grating adjustment | TP1, Pin 2(TRK. ERR) | Grating adjustment slit |
| 3 | Tracking error balance adjustment | TP1, Pin 2(TRK. ERR) | VR102(TRK. BAL) |
| 4 | Pickup radial/tangential direction tilt adjustment | TP1, Pin 1(RF) | Radial tilt adjustment screw, Tangential tilt adjustment screw |
| 5 | RF level adjustment | TP1, Pin 1(RF) | VR1(RF level) |
| 6 | Focus servo loop gain adjustment | TP1, Pin 5(FCS. IN) TP1, Pin 6(FCS. ERR) | VR152(FCS. GAN) |
| 7 | Tracking servo loop gain adjustment | TP1, Pin 3(TRK. IN) TP1, Pin 2(TRK. ERR) | VR151(TRK. GAN) |
| 8 | Focus error signal verification | TP1, Pin 6(FCS. ERR) | ————— |

● Abbreviation table

| | |
|----------|-------------------|
| FCS. ERR | :Focus Error |
| FCS. OFS | :Focus Offset |
| TRK. ERR | :Tracking Error |
| TRK. BAL | :Tracking Balance |
| FCS. GAN | :Focus Gain |
| TRK. GAN | :Tracking Gain |
| FCS. IN | :Focus In |
| TRK. IN | :Tracking In |

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low-pass filter ($39\text{ k}\Omega + 0.001\text{ }\mu\text{F}$)
5. Resistor ($100\text{ k}\Omega$)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

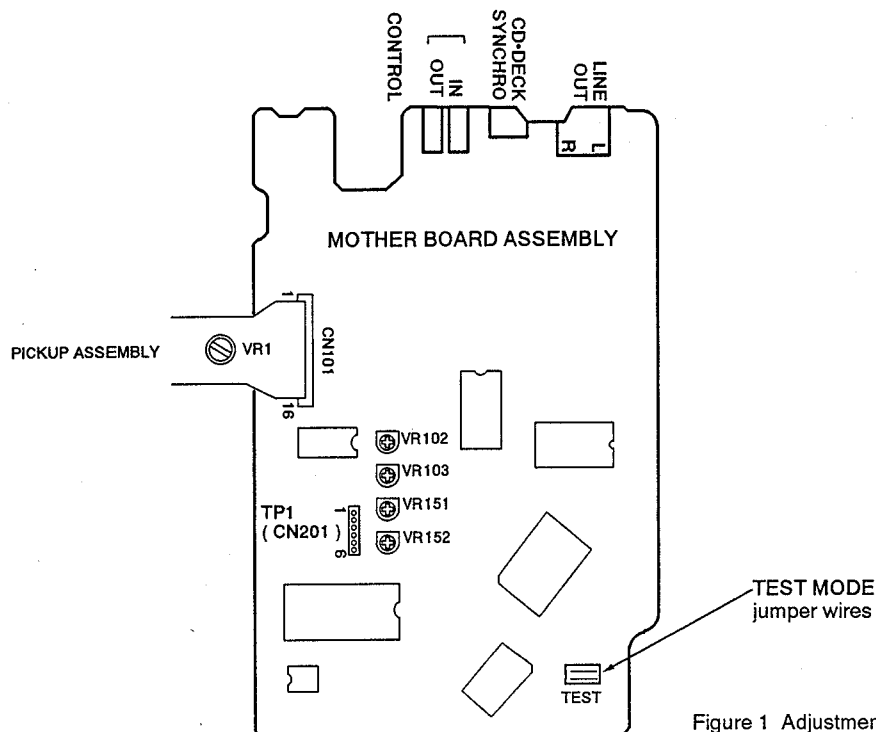


Figure 1 Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 - 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

| Code | Key Name | Function in Test Mode | Explanation |
|------|------------------|---------------------------|---|
| | PGM (PROGRAM) | Focus servo close | <p>The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised twice and returned to its original position.</p> |
| ▷ | PLAY | Spindle servo ON | <p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p> |
| □□ | PAUSE | Tracking servo close/open | <p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p> |

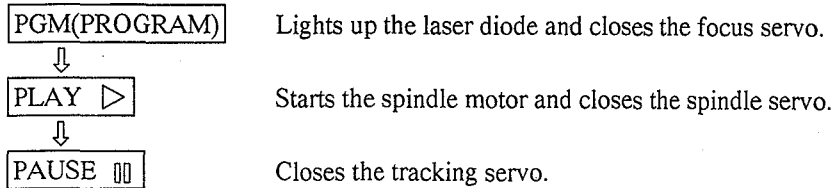
| Code | Key Name | Function In Test Mode | Explanation |
|------|-------------------------|--------------------------------|--|
| ◀◀ | MANUAL SEARCH REV | Carriage reverse (inwards) | Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
| ▶▶ | MANUAL SEARCH FWD | Carriage forward (outwards) | Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
| □ | STOP | Stop | Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed. |
| △ | EJECT | CD magazine eject | Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is. |

Note : When inserting the magazine, disc 1 of the magazine is loaded automatically.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Adjustment

| | | | |
|--------------------------------------|---|-----------------------|---|
| ● Objective | Sets the DC offset for the focus error amp. | | |
| ● Symptom when out of adjustment | The model does not focus in and the RF signal is dirty. | | |
| ● Measurement instrument connections | Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) | ● Player state | Test mode, stopped (just the Power switch on) |
| | [Settings] 5 mV/division 10 ms/division DC mode | ● Adjustment location | VR103 (FCS. OFS) |
| | | ● Disc | None needed |

[Procedure]

Adjust VR103 (FCS. OFS) so that the DC voltage at TP1, Pin 6 (FCS. ERR) is -150 ± 50 mV.

2. Grating Adjustment

| | | | |
|--------------------------------------|--|-----------------------|--|
| ● Objective | To align the tracking error generation laser beam spots to the optimum angle on the track. | | |
| ● Symptom when out of adjustment | Play does not start, track search is impossible, tracks are skipped. | | |
| ● Measurement instrument connections | Connect the oscilloscope to TP1, Pin 2 (TRK. ERR) via a low pass filter. (See Figure 2) | ● Player state | Test mode, focus and spindle servos closed and tracking servo open |
| | [Settings] 50 mV/division 5 ms/division DC mode | ● Adjustment location | Pickup grating adjustment slit |
| | | ● Disc | YEDS-7 |

[Procedure]

1. Move the pickup to midway across the disc (R=35mm) with the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key.
2. Press the PGM (PROGRAM) key, then the PLAY \triangleright key in that order to close the focus servo then the spindle servo.
3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

Note : The amplitude of the tracking error signal is about 3 Vp-p (when a $39\text{ k}\Omega + 0.001\text{ }\mu\text{F}$ low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.

5. Return the pickup to more or less midway across the disc with the MANUAL SEARCH REV $\triangleleft\triangleleft$ key, press the PAUSE \square key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

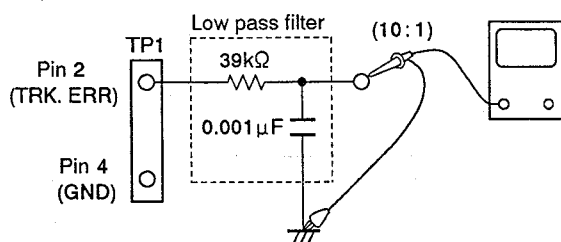
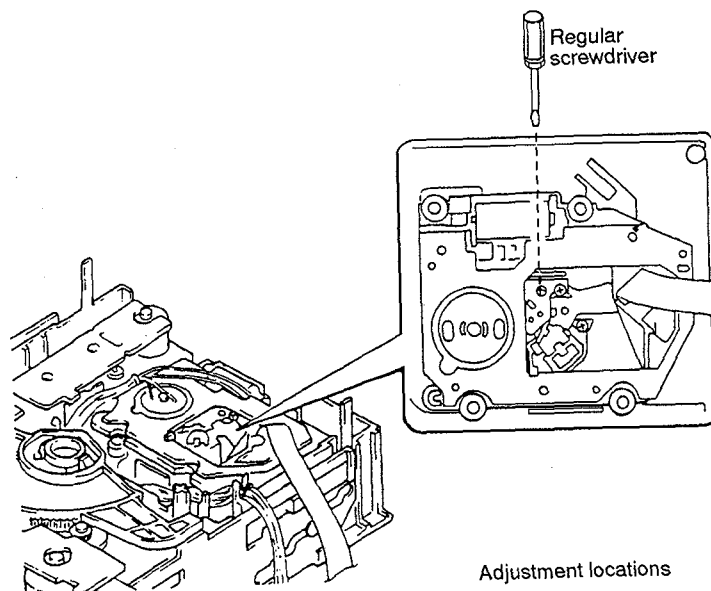


Figure 2



[How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1, Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)

This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

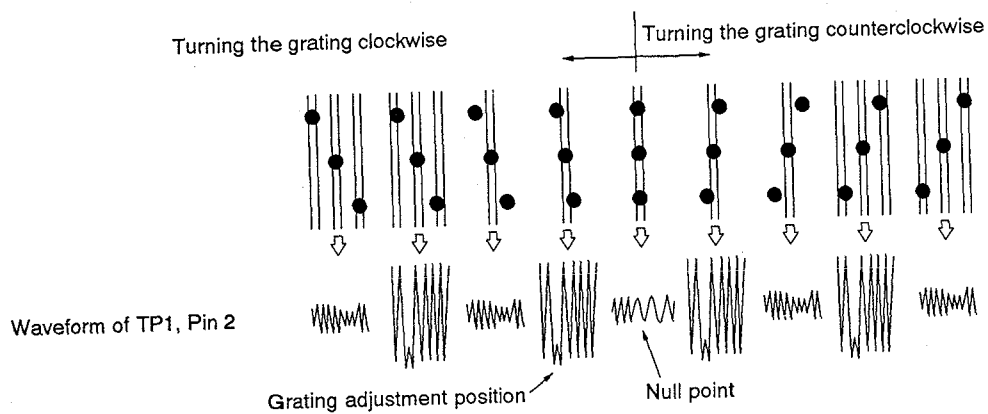
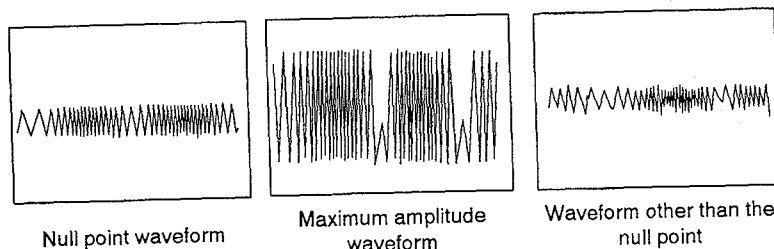


Figure 3

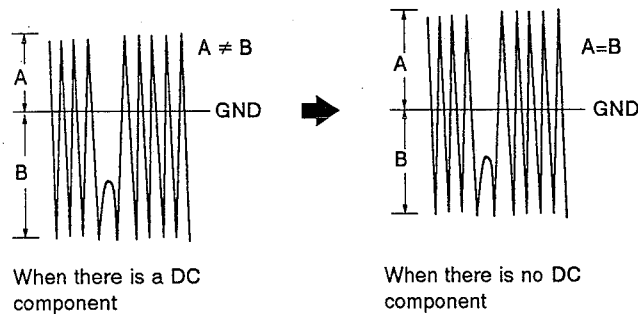


3. Tracking Error Balance Adjustment

| | | | |
|--------------------------------------|---|-----------------------|--|
| ● Objective | To correct for the variation in the sensitivity of the tracking photodiode. | | |
| ● Symptom when out of adjustment | Play does not start or track search is impossible. | | |
| ● Measurement instrument connections | Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode | ● Player state | Test mode, focus and spindle servos closed and tracking servo open |
| | | ● Adjustment location | VR102 (TRK. BAL) |
| | | ● Disc | YEDS-7 |

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD >> or REV << key.
2. Press the PGM (PROGRAM) key, then the PLAY > key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK. BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1, Pin 2 (TRK. ERR) are the same (in other words, so that there is no DC component).



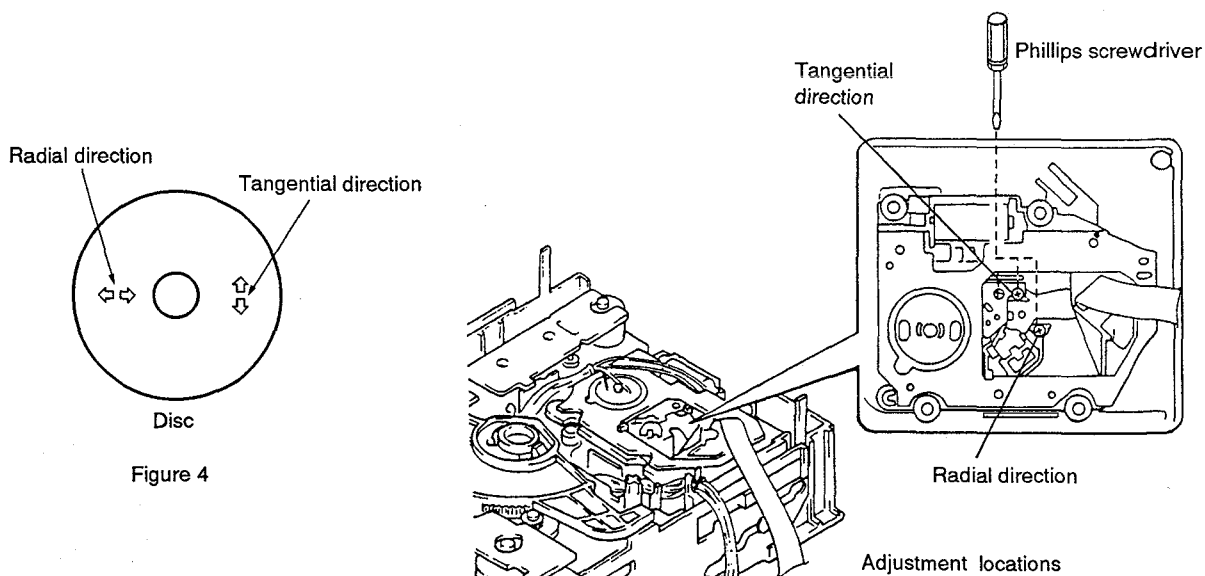
4. Pickup Radial/Tangential Tilt Adjustment

| | | | |
|--------------------------------------|---|-----------------------|--|
| ● Objective | To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals. | | |
| ● Symptom when out of adjustment | Sound broken; some discs can be played but not others. | | |
| ● Measurement instrument connections | Connect the oscilloscope to TP1, Pin 1 (RF). | ● Player state | Test mode, play |
| | [Settings] 20 mV/division 200 ns/division AC mode | ● Adjustment location | Pickup radial tilt adjustment screw and tangential tilt adjustment screw |
| | | ● Disc | YEDS-7 |

[Procedure]

1. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35mm). Press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE || key in that order to close the focus servo then the spindle servo and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.

Note: Radial and tangential mean the directions relative to the disc shown in Figure 4.



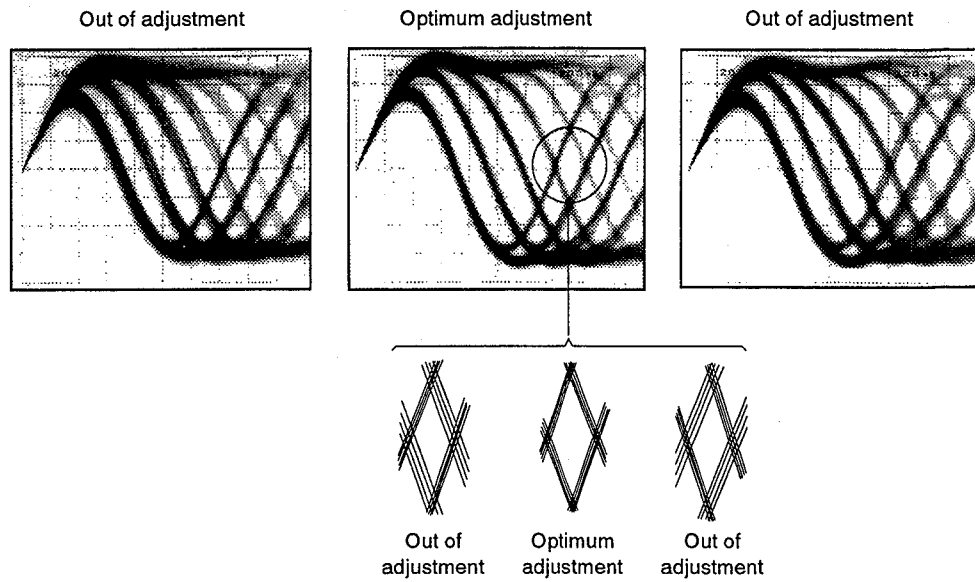


Figure 5 Eye pattern

5. RF Level Adjustment

| | | | |
|--|--|-----------------------|------------------|
| ● Objective | To optimize the playback RF signal amplitude | | |
| ● Symptom when out of adjustment | No play or no search | | |
| ● Measurement instrument connections | Connect the oscilloscope to TPI, Pin 1 (RF). | ● Player state | Test mode, play |
| | [Settings] 50 mV/division 10 ms/division AC mode | ● Adjustment location | VR1(laser power) |
| | | ● Disc | YEDS-7 |
| <p>[Procedure]</p> <p>1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key, then press the PGM (PROGRAM) key, then the PLAY ▷ key in that order to close the respective servos and put the player into play mode.</p> <p>2. Adjust VR1 (laser power) so that the RF signal amplitude is $1.2\text{ V}_{\text{p-p}} \pm 0.1\text{ V}$.</p> | | | |

6. Focus Servo Loop Gain Adjustment

| | | | |
|--------------------------------------|--|-----------------------|------------------|
| ● Objective | To optimize the focus servo loop gain. | | |
| ● Symptom when out of adjustment | Playback does not start or focus actuator noisy. | | |
| ● Measurement instrument connections | See figure 6. | ● Player state | Test mode, play |
| | [Settings] | ● Adjustment location | VR152 (FCS. GAN) |
| | CH1 20 mV/division X-Y mode | ● Disc | YEDS-7 |

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY \triangleright key, then the PAUSE $\square\square$ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

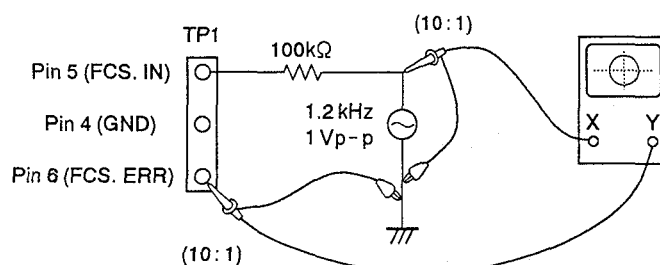
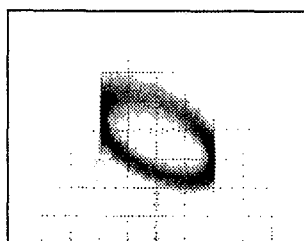
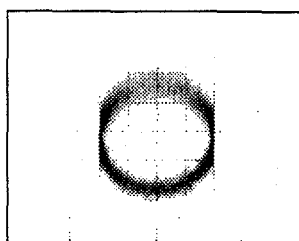


Figure 6

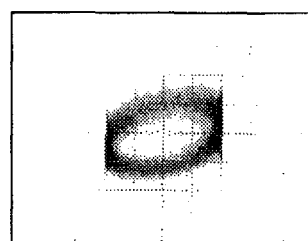
Focus Gain Adjustment



Higher gain



Optimum gain



Lower gain

7. Tracking Servo Loop Gain Adjustment

| | | | |
|--------------------------------------|---|-----------------------|------------------|
| ● Objective | To optimize the tracking servo loop gain. | | |
| ● Symptom when out of adjustment | Playback does not start, during searches the actuator is noisy, or tracks are skipped. | | |
| ● Measurement instrument connections | See Figure 7. | ● Player state | Test mode, play |
| | [Settings] CH1 CH2 50 mV/division 50 mV/division X-Y mode | ● Adjustment location | VR151 (TRK. GAN) |
| | | ● Disc | YEDS-7 |

- [Procedure]
1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
 2. Press the MANUAL SEARCH FWD >> or REV << key to move the pickup to halfway across the disc (R=35 mm), then press the PGM(PROGRAM) key, the PLAY > key, then the PAUSE || key in that order to close the corresponding servos and put the player into play mode.
 3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

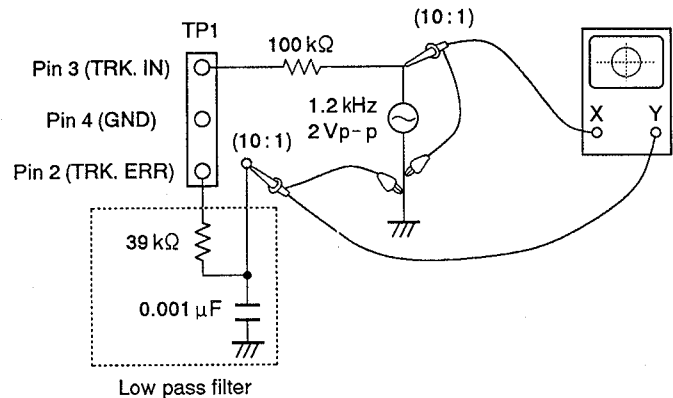
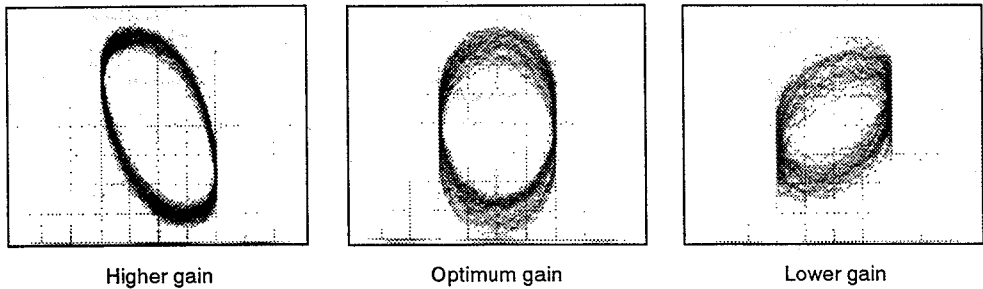


Figure 7

Tracking Gain Adjustment



8. Focus Error Signal (Focus S Curve) Verification

| | | | |
|--------------------------------------|---|---|---|
| ● Objective | To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the waveform for the focus error signal. | | |
| ● Symptom when out of adjustment | | | |
| ● Measurement instrument connections | Connect the oscilloscope to TP1, Pin 6 (FCS. ERR). [Settings] 100 mV/division 5 ms/division DC mode | ● Player state ● Adjustment location ● Disc | Test mode, stop None YEDS-7 |

[Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PGM (PROGRAM) key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 V_{p-p} and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PGM (PROGRAM) key is pressed, press this key over and over until you have checked the waveform.

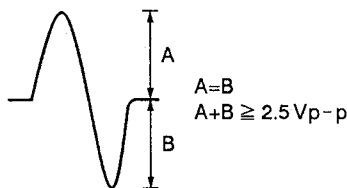


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustment have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 V_{p-p}).
2. The focus error signal amplitude is extremely small (less than 2.5 V_{p-p}).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 V_{p-p}) and even if VR1 (laser power) is adjusted, the RF signal can not be brought up to the standard level.

8. RÉGLAGES

8.1 Méthodes de Réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

● Points de Réglage/Point et Ordre de Vérification

| Etape | Point | Point d'Essai | Emplacement du Réglage |
|-------|--|---|---|
| 1 | Réglage du décalage de la mise au point | TP1, Broche 6 (FCS. ERR) | VR103 (FCS. OFS) |
| 2 | Réglage du réseau de diffraction | TP1, Broche 2 (TRK. ERR) | Fente de réglage du réseau de diffraction |
| 3 | Réglage d'équilibrage d'erreur d'alignement | TP1, Broche 2 (TRK. ERR) | VR102 (TRK. BAL) |
| 4 | Réglage d'inclinaison radiale/tangentielle du capteur | TP1, Broche 1 (RF) | Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle |
| 5 | Réglage du niveau RF | TP1, Broche 1 (RF) | VR1 (niveau RF) |
| 6 | Réglage de gain de boucle asservie de la mise au point | TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR) | VR152 (FCS. GAN) |
| 7 | Réglage de gain de boucle asservie de l'alignement | TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR) | VR151 (TRK. GAN) |
| 8 | Vérification du signal d'erreur de la mise au point | TP1, Broche 6 (FCS. ERR) | _____ |

● Tableau des abréviations

| | |
|----------|------------------------------------|
| FCS. ERR | :Erreur de mise au point |
| FCS. OFS | :Décalage de mise au point |
| TRK. ERR | :Erreur d'alignement |
| TRK. BAL | :Équilibrage d'erreur d'alignement |
| FCS. GAN | :Gain de mise au point |
| TRK. GAN | :Gain d'alignement |
| FCS. IN | :Mise au point correcte |
| TRK. IN | :Alignement correct |

● Instruments de Mesure et Outils

1. Oscilloscope cathodique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS-7)
4. Filtre passe-bas ($39\text{ k}\Omega + 0.001\text{ }\mu\text{F}$)
5. Résistance ($100\text{ k}\Omega$)
6. Outils conventionnels

● Point d'Essai et Positions de Réglage de la Résistance Variable

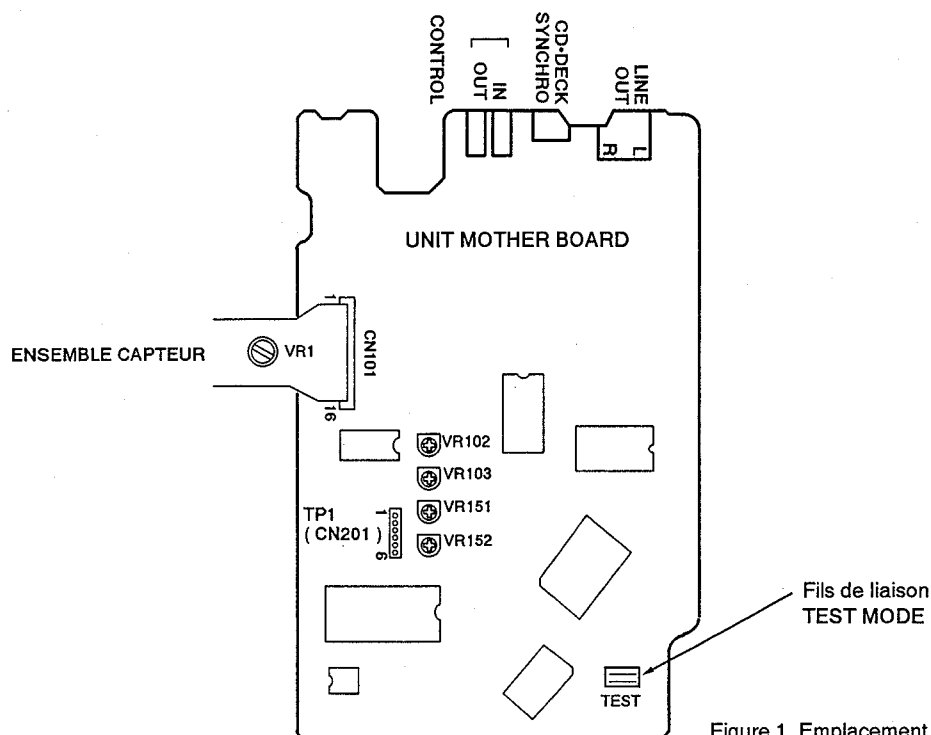


Figure 1 Emplacement des réglages

● Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

● Mode d'Essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en Mode d'Essai]

Voici la manière de mettre le modèle en mode d'essai.

1. Débrancher le cordon d'alimentation de la prise secteur.
2. Court-circuiter les fils de liaison du mode d'essai. (Voir Figure 1.)
3. Rebrancher le cordon d'alimentation dans la prise secteur.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise sous tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.

1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Débrancher le cordon d'alimentation de la prise secteur.

[Fonctionnement des touches en mode d'essai]

| Code | Nom de la Touche | Fonction en Mode d'Essai | Explications |
|------|------------------|--|---|
| | PGM (PROGRAM) | Fermeture du circuit asservi de la mise au point | La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, se relève, puis s'abaisse et se soulève une deuxième fois et enfin, revient à sa position de départ. |
| ▷ | PLAY | Asservissement de rotation en service | Démarré le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit. |
| □□ | PAUSE | Ouverture/Fermeture du circuit servo de l'alignement | Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en cours de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit dérégulé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule, et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé. |

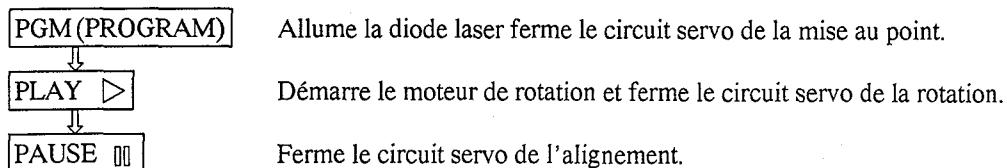
| Code | Nom de la Touche | Fonction en Mode d'Essai | Explications |
|------|-------------------------|--|---|
| ◀◀ | MANUAL SEARCH REV | Inversion du chariot (vers l'intérieur) | Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution. |
| ▶▶ | MANUAL SEARCH FWD | Inversion du chariot (vers l'extérieur) | Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution. |
| □ | STOP | Arrêt | Initialiser et la rotation du disque s'arrête. Le capteur et le disque ne bougent pas lorsque cette touche est enclenchée. |
| △ | EJECT | Ejection du magasin à disques | Range le disque n°1 dans le magasin à disques, puis éjecte celui-ci. Cependant, bien que le magasin soit éjecté, le capteur ne revient pas sur sa position de départ. Même si le magasin à disques est réinstallé, la position du capteur reste inchangée. |

Remarque : Lors de l'insertion du magasin, le disque 1 est chargé automatiquement.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.

Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.



Attendre 2 à 3 secondes entre chaque opération.

1. Réglage du Décalage de la Mise au Point

| | | | |
|---|--|--------------------------|---|
| ● Objectif | Règle le décalage CC de l'amplificateur d'erreur de mise au point. | | |
| ● Symptôme quand déréglé | Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair. | | |
| ● Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). | ● Etat du lecteur | Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche) |
| | [Réglages] 5 mV/division 10 ms/division mode CC | ● Emplacement du réglage | VR103(FCS. OFS) |
| | | ● Disque | Aucun requis |
| <p>[Marche à suivre]</p> <p>Ajuster VR103 (FCS. OFS) de façon que la tension à TP1 broche 6 (FCS. ERR) soit -150 ± 50 mV.</p> | | | |

2. Réglage du Réseau de Diffraction

| | | | |
|--|--|--------------------------|--|
| ● Objectif | Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste. | | |
| ● Symptôme quand déréglé | La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées. | | |
| ● Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR) via un filtre passe-bas. (Voir Figure 2) | ● Etat du lecteur | Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. |
| | | ● Emplacement du réglage | Fente de réglage du réseau de diffraction du capteur. |
| | [Réglages] 50 mV/division 5 ms/division mode CC | ● Disque | YEDS-7 |

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY ▷, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis ordinaire dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à partir du point zéro et régler le réseau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3 Vc-c (quand un filtre passe-bas de $39\text{ k}\Omega \pm 0,001\text{ }\mu\text{F}$ est utilisé). Si cette amplitude est extrêmement petite (2 Vc-c ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.

5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche MANUAL SEARCH REV ◁◁, appuyer sur la touche PAUSE ▢▢ et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres n'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

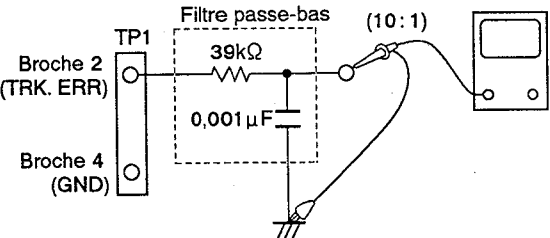
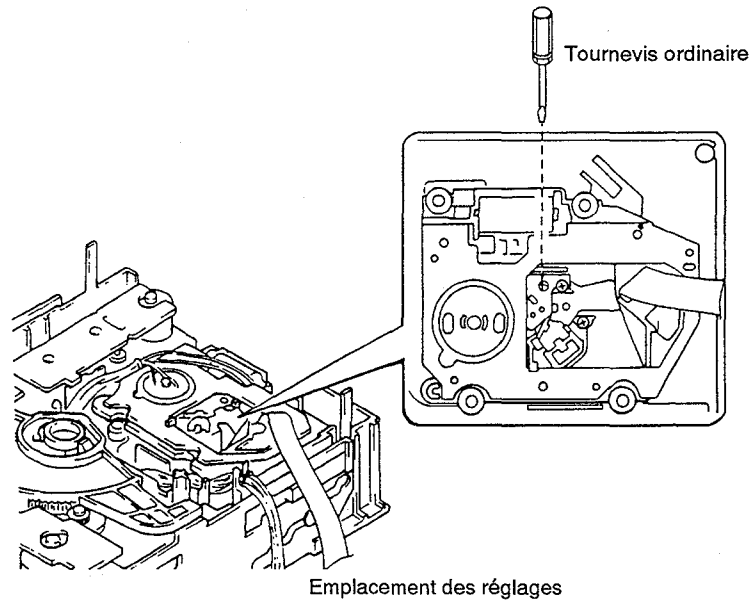


Figure 2



[Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).

Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référence.

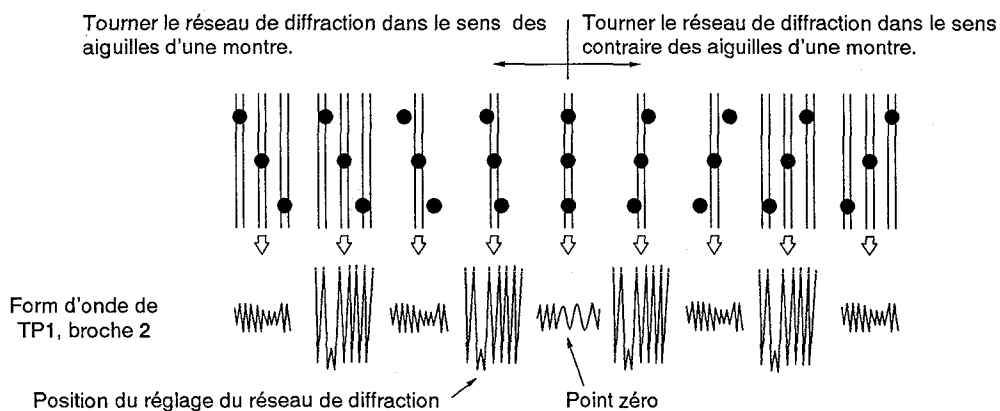
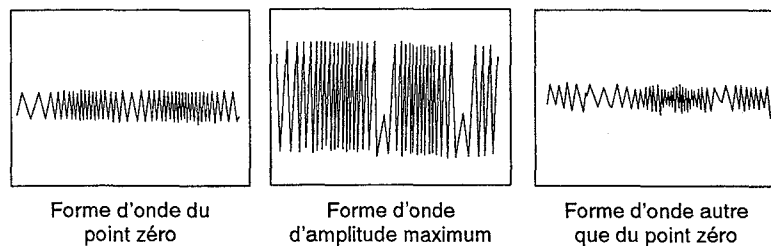


Figure 3

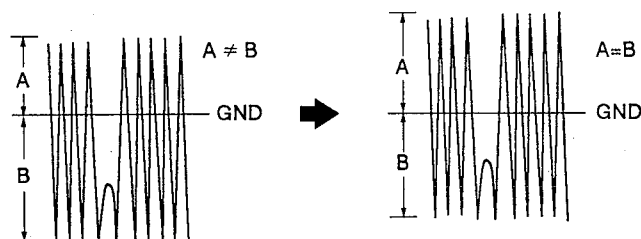


3. Réglage d'Équilibrage d'Erreur d'Alignement

| | | | |
|--|---|--------------------------|--|
| ● Objectif | Pour corriger la variation de sensibilité de la photodiode d'alignement. | | |
| ● Symptôme quand déréglé | La lecture ne commence pas, la recherche de piste est impossible. | | |
| ● Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas. | ● Etat du lecteur | Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. |
| | [Réglages] 50 mV/division 5 ms/division mode CC | ● Emplacement du réglage | VR102(TRK. BAL) |
| | | ● Disque | YEDS-7 |

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD $\triangleright\triangleright$ ou la touche REV $\triangleleft\triangleleft$.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY \triangleright , dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK. BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK. ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC

S'il n'y a pas de composant CC

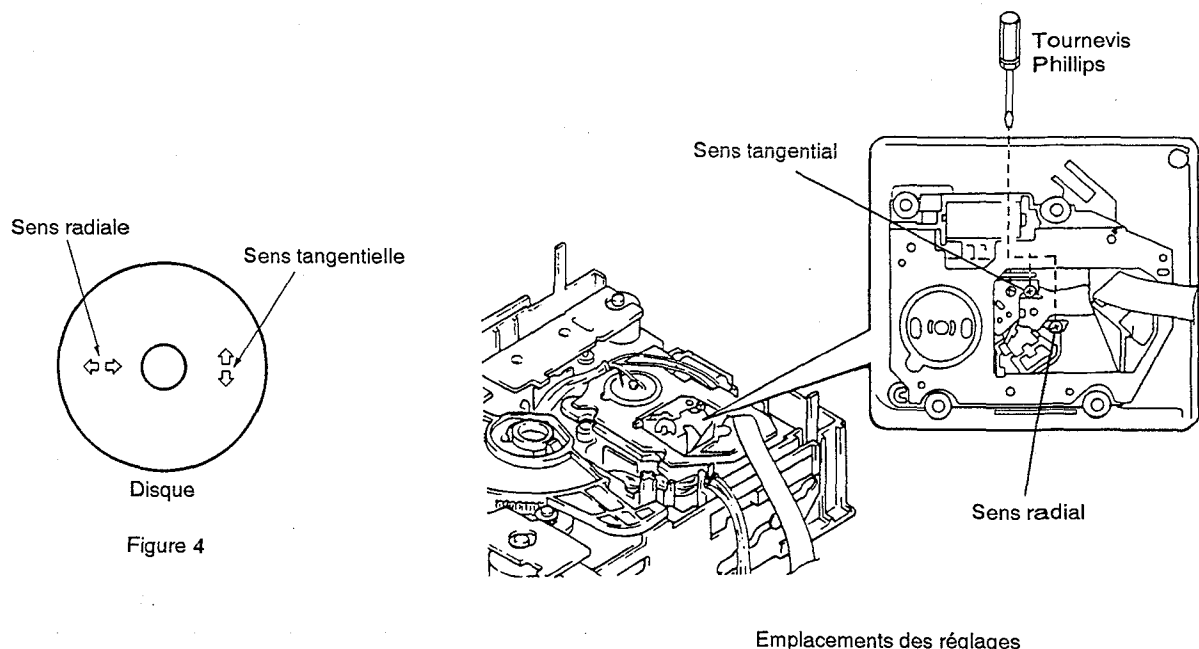
4. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

| | | | |
|--|--|---|--|
| ● Objectif | Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent verticalement le disque et permettre ainsi la lecture optimum des signaux RF. | | |
| ● Symptôme quand déréglé | Son interrompu ; certains disques peuvent être lus et pas d'autres. | | |
| ● Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA | ● Etat du lecteur ● Emplacement du réglage ● Disque | Mode d'essai, lecture Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tangentielle. YEDS-7 |

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL SEARCH FWD >> ou la touche REV << pour déplacer le capteur à mi-chemin sur le disque (R=35 mm). Appuyer sur la touche PGM (PROGRAM), PLAY > et PAUSE || dans cet ordre, afin de fermer le circuit servo de la mise au point, puis celui de la rotation et placer le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.

Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.



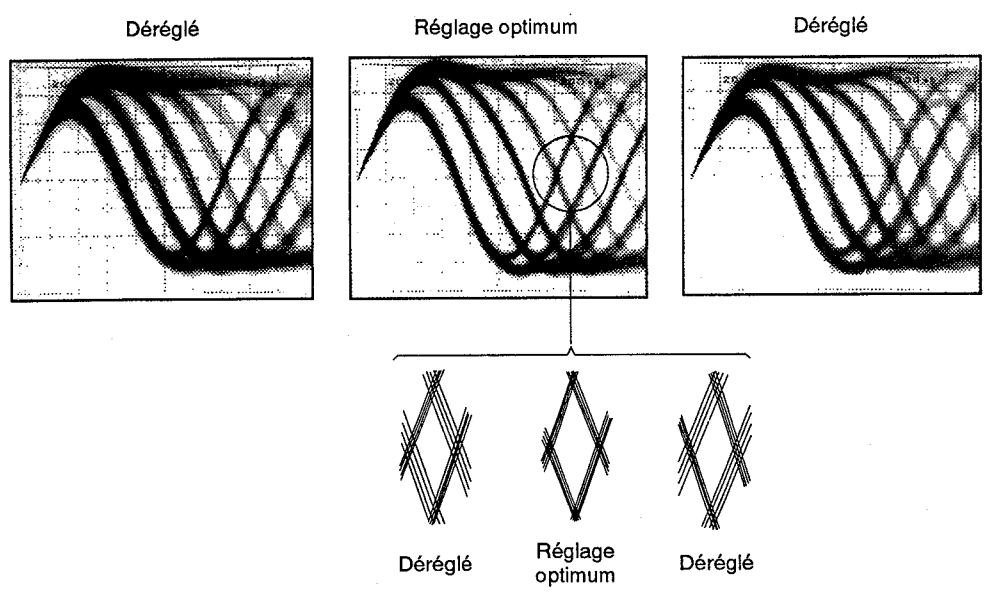


Figure 5 Motif en oeil

5. Réglage du Niveau RF (Niveau RF)

| | | | |
|--|--|--------------------------------------|---------------------------------------|
| ● Objectif | Pour optimiser l'amplitude du signal RF de lecture | | |
| ● Symptôme quand déréglé | Pas de lecture ni de recherche | | |
| ● Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 1 (RF). | ● Etat du lecteur | Mode d'essai, lecture |
| | [Réglages] 50 mV/division 10 ms/division mode CA | ● Emplacement du réglage ● Disque | VR1 (alimentation du laser) YEDS-7 |

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
Ensuite, appuyer sur la touche PGM(PROGRAM), puis sur la touche PLAY ▷, dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne $1,2 V_{c-c} \pm 0,1 V$.

6. Réglage de Gain de Boucle Asservie de la Mise au Point

| | | | |
|--|--|--------------------------|-----------------------|
| ● Objectif | Pour optimiser le gain de la boucle d'asservissement de la mise au point. | | |
| ● Symptôme quand déréglé | La lecture ne commence pas ou l'actuateur de la mise au point est parasité. | | |
| ● Raccordement des instruments de mesure | Voir Figure 6. | ● Etat du lecteur | Mode d'essai, lecture |
| | [Réglages] GAN. 1 GAN. 2 20 mV/division 5mV/division mode X - Y | ● Emplacement du réglage | VR152 (FCS. GAN) |
| | | ● Disque | YEDS-7 |

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD $\triangleright\triangleright$ ou la touche REV $\triangleleft\triangleleft$ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY \triangleright , puis sur la touche PAUSE $\square\square$, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

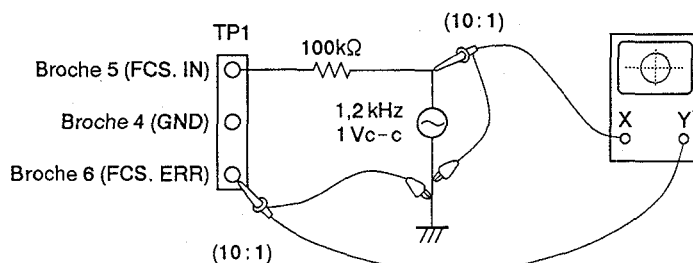
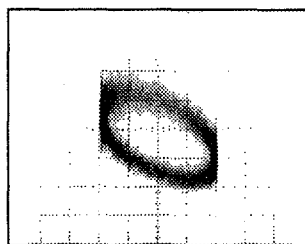
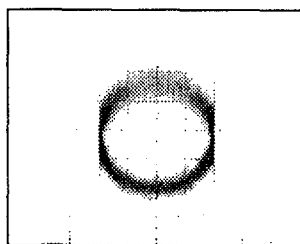


Figure 6

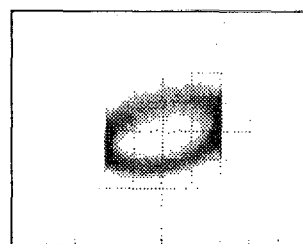
Réglage de gain de mise au point



Gain supérieur



Gain optimum



Gain inférieur

7. Réglage de Gain de Boucle Asservie de l'Alignement

| | | | |
|--|--|--|-----------------------|
| ● Objectif | Pour optimiser le gain de la boucle d'asservissement de l'alignement. | | |
| ● Symptôme quand déréglé | La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées. | | |
| ● Raccordement des instruments de mesure | Voir Figure 7. | ● Etat du lecteur | Mode d'essai, lecture |
| | [Réglages] GAN. 1 GAN. 2 50 mV/division 50 mV/division mode X - Y | ● Emplacement du réglage VR151 (TRK. GAN) ● Disque YEDS-7 | |

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD >> ou la touche REV << pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY >, puis sur la touche PAUSE ||, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

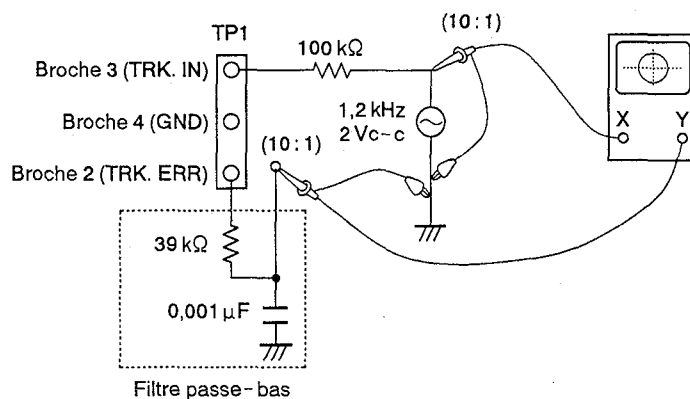
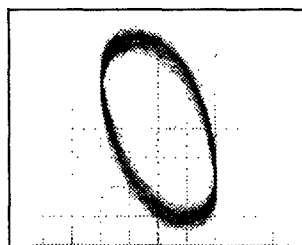
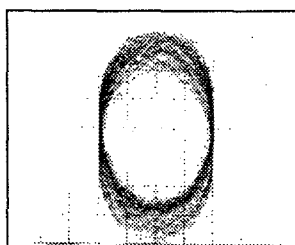


Figure 7

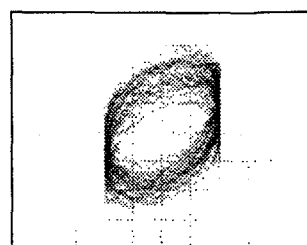
Réglage de gain d'alignement



Gain supérieur



Gain optimum



Gain inférieur

8. Vérification du Signal d'Erreur de la Mise au Point

| | | | |
|--|---|---|--|
| ● Objectif | Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à partir de la forme d'onde du signal d'erreur de mise au point. | | |
| ● Symptôme quand déréglé | | | |
| ● Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 100 mV/division 5 ms/division mode CC | ● Etat du lecteur ● Emplacement du réglage ● Disque | Mode de test, arrêt Aucun YEDS-7 |

[Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PGM (PROGRAM) et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PGM (PROGRAM) est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

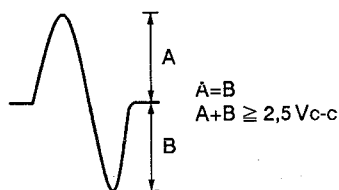


Figure 8

[Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

8. AJUSTES

8.1 Métodos de Ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

● Ítemes de Ajuste/Verificación y Orden

| Paso | Ítem | Punto de Prueba | Lugar de Ajuste |
|------|--|---|--|
| 1 | Ajuste del descentramiento de enfoque | TP1, Patilla 6(FCS. ERR) | VR103(FCS. OFS) |
| 2 | Ajuste de retícula | TP1, Patilla 2(TRK. ERR) | Ranura de ajuste de retícula |
| 3 | Ajuste del equilibrio de ajuste de seguimiento | TP1, Patilla 2(TRK. ERR) | VR102(TRK. BAL) |
| 4 | Ajuste de la inclinación en sentido radial / tangencial del captor | TP1, Patilla 1(RF) | Tornillo de ajuste de la inclinación radial. Tornillo de ajuste de la inclinación tangencial |
| 5 | Ajuste del nivel de RF | TP1, Patilla 1(RF) | VR1(Nivel de RF) |
| 6 | Ajuste de la ganancia del bucle del servo de enfoque | TP1, Patilla 5(FCS. IN) TP1, Patilla 6(FCS. ERR) | VR152(FCS. GAN) |
| 7 | Ajuste de la ganancia del bucle del servo de seguimiento | TP1, Patilla 3(TRK. IN) TP1, Patilla 2(TRK. ERR) | VR151(TRK. GAN) |
| 8 | Verificación de la señal de error de enfoque | TP1, Patilla 6(FCS. ERR) | _____ |

● Tabla de abreviaturas

| | |
|----------|-----------------------------|
| FCS. ERR | :Error de enfoque |
| FCS. OFS | :Descentramiento de enfoque |
| TRK. ERR | :Error de seguimiento |
| TRK. BAL | :Equilibrio de seguimiento |
| FCS GAN | :Ganacia de enfoque |
| TRK GAN | :Ganacia de seguimiento |
| FCS. IN | :Entrada de enfoque |
| TRK. IN | :Entrada de seguimiento |

● Instrumentos y Herramientas de Medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Filtro de paso bajo (39 k Ω + 0,001 μ F)
5. Resistor (100 k Ω)
6. Herramientas estándar

● Ubicación de Los Puntos de Prueba y Los Resistores Variables de Ajuste

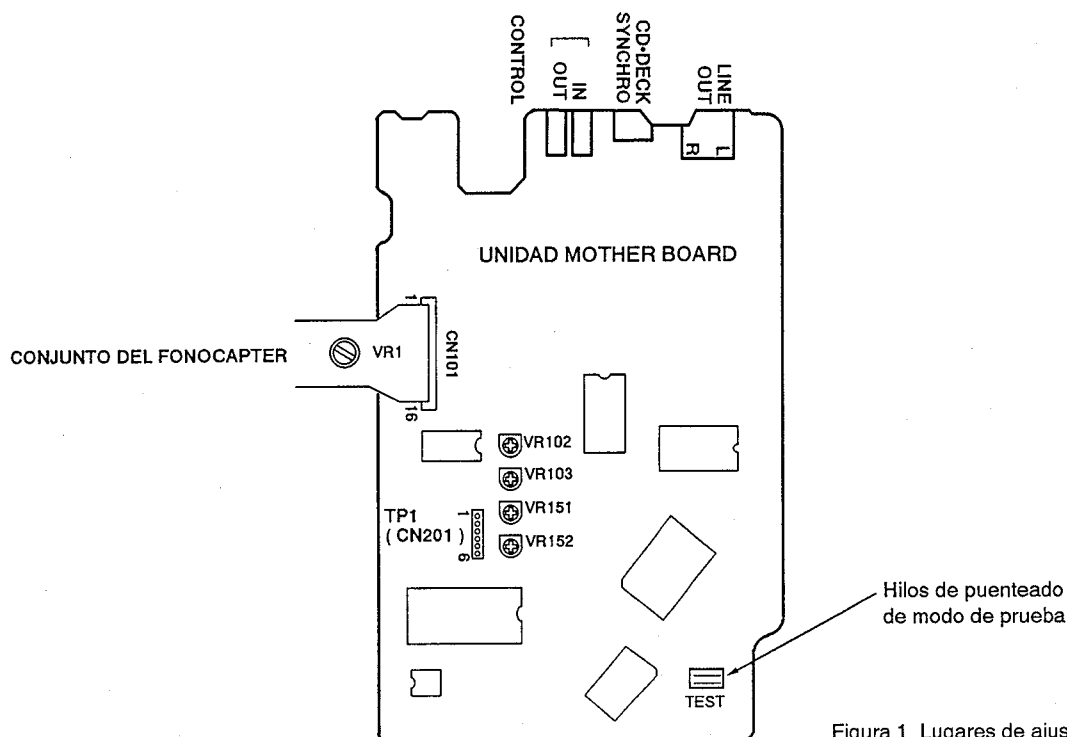


Figura 1 Lugares de ajuste

● Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

● Modo de Prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

1. Desenchufe el cable de alimentación de la toma de CA.
2. Controcircuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Enchufe el cable de alimentación de la toma de CA.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siendo la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.
2. Desenchufe el cable de alimentación de la toma de CA.

[Operaciones de teclas en el modo de prueba]

| Código | Nombre de la Tecla | Función en el Modo de Prueba | Explicación |
|--------|--------------------|--|---|
| | PGM (PROGRAM) | Cierre del servo de enfoque | <p>El diodo láser se encenderá y el actuador de enfoque se eleva, después se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoca sobre el disco.</p> <p>Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque.</p> <p>Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia arriba, y después se levantará y descenderá y se eleva dos veces, y volverá a su posición original.</p> |
| ▷ | PLAY | Activación del servo del eje | <p>Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado.</p> <p>Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima.</p> <p>Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz láserico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.</p> |
| □□ | PAUSE | Apertura/cierre del servo de seguimiento | <p>Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción.</p> <p>Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo láserico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema.</p> <p>Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.</p> |

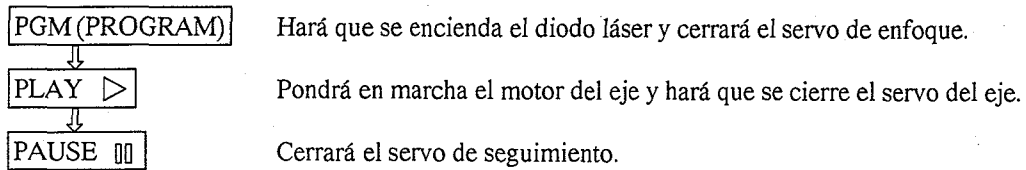
| Código | Nombre de la Tecla | Función en el Modo de Prueba | Explicación |
|--------|-------------------------|--|---|
| ◀◀ | MANUAL SEARCH REV | Retroceso del carro (hacia adentro) | Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación. |
| ▶▶ | MANUAL SEARCH FWD | Avance del carro (hacia afuera) | Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación. |
| □ | STOP | Parada | Inicializa y se para la rotación del disco. El captor y el disco permanecen donde están cuando se presiona esta tecla. |
| △ | EJECT | Expulsión del cargador de discos compactos | Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba. |

Nota : Cuando inserte el cargador, el disco 1 del mismo se cargará automáticamente.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.

A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.



Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Ajuste del Descentramiento del Enfoque

| | | | |
|--|--|--------------------------|---|
| ● Objetivo | Ajuste de la tensión de CC para el amplificador de error de enfoque. | | |
| ● Síntomas en caso de desajuste | El reproductor no enfoca y la señal de RF contiene perturbaciones. | | |
| ● Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR) | ● Estado del reproductor | Mode de prueba, parado (con el interruptor de alimentación en ON) |
| | [Ajustes] 5 mV/división 10 ms/división modo de CC | ● Lugar de ajuste | VR103 (FCS. OFS) |
| | | ● Disco | No es necesario |
| [Procedimiento] Ajuste VR103 (FCS. OFS) de forma que la tensión de CC de TP1, patilla 6 (FCS. ERR) sea de -15.0 ± 50 mV. | | | |

2. Ajuste de Retícula

| | | | |
|--|---|--|---|
| ● Objetivo | Alineación de los puntos del haz láser de generación de error de seguimiento al ángulo óptimo en la pista. | | |
| ● Síntomas en caso de desajuste | La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan. | | |
| ● Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla2 (TRK. ERR) a través de un filtro de paso bajo. (Consulte la figura 2) [Ajustes] 50 mV/división 5 ms/división modo de CC | ● Estado del reproductor ● Lugar de ajuste ● Disco | Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto. Ranura de ajuste de retícula del captor YEDS-7 |

[Procedimiento]

1. Mueva el captor hasta el la mitad del disco (R=35mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY ▷, por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, consulte la página siguiente.
4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el destornillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

Referencia : En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

Nota : La amplitud de la señal de error de seguimiento será de aproximadamente 3 Vp-p (cuando se emplee un filtro de paso bajo de 39 kΩ, 0,001 μF). Si la amplitud está extremadamente pequeña (2 Vp-p ó menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustarla.

5. Devuelva el captor hasta la mitad más o menos del disco con la tecla MANUAL SEARCH REV ◁◁, presione la tecla PAUSE ⏸, y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

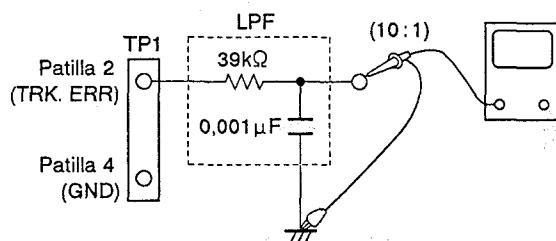
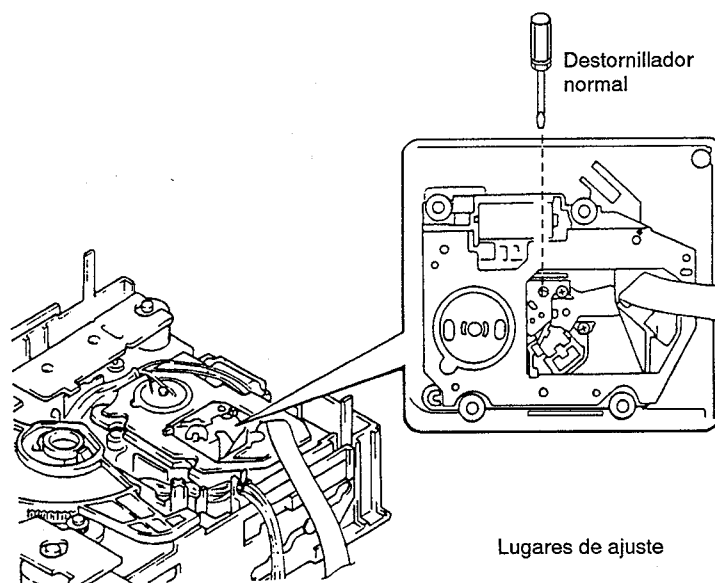


Figura 2



[Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces lásericos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)

Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

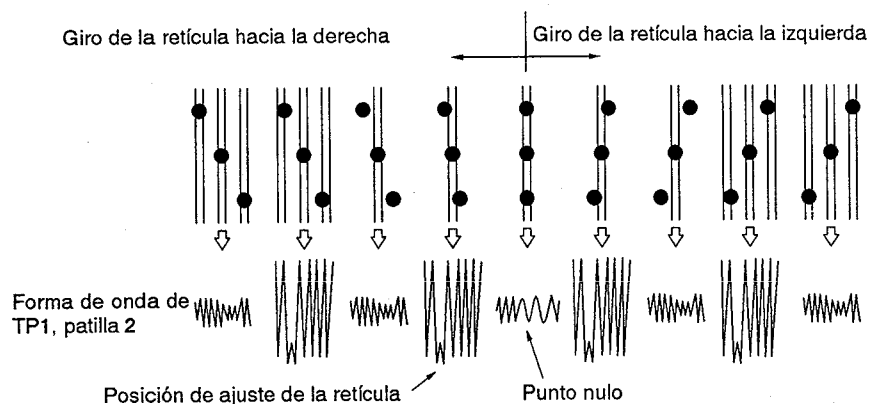
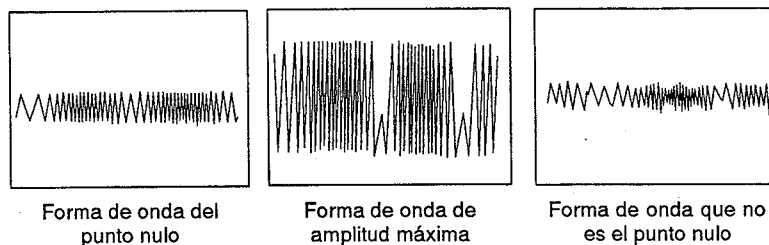


Figura 3

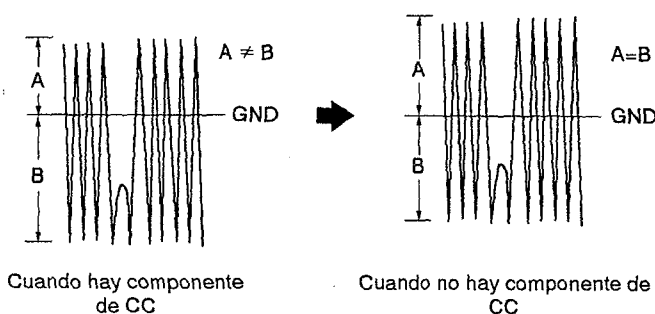


3. Ajuste del Equilibrio de Error de Seguimiento

| | | | |
|--|---|--|--|
| ● Objetivo | Corrección de la variación de la sensibilidad del fotodiodo de seguimiento. | | |
| ● Síntomas en caso de desajuste | La reproducción no se inicia o la búsqueda de canciones es imposible. | | |
| ● Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo [Ajustes] 50 mV/división 5 ms/división modo de CC | ● Estado del reproductor ● Lugar de ajuste ● Disco | Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto VR102 (TRK. BAL) YEDS-7 |

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD $\triangleright\triangleright$ o la tecla REV $\triangleleft\triangleleft$.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY \triangleright , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Ajuste VR102 (TRK. BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1 patilla 2 (TRK. ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).



4. Ajuste de la Inclinación en Sentido Radial / Tangencial del Captor

| | | | |
|--|--|--|---|
| ● Objetivo | Ajustar el ángulo del captor en relación con el disco de forma que los haces lásericos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF. | | |
| ● Síntomas en caso de desajuste | Sonido quebrado, algunos discos pueden reproducirse pero otros no. | | |
| ● Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 20 mV/división 200 ns/división modo de CA | ● Estado del reproductor ● Lugar de ajuste ● Disco | Modo de prueba, reproducción Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial YEDS-7 |

[Procedimiento]

- Para un tipo de reproducción múltiple de disco compacto, emplee la tecla MANUAL SEARCH FWD >>> o la tecla REV <<< a fin de mover el captor hasta la mitad del disco (R=35 mm)
Presione la tecla PGM (PROGRAM), la tecla PLAY >, y después la tecla PAUSE |||, por este orden, a fin de cerrar el servo de enfoque, después el servo del eje, y por último para poner el reproductor en el modo de reproducción.
- En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
- A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 5).
- Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.

Nota:Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.

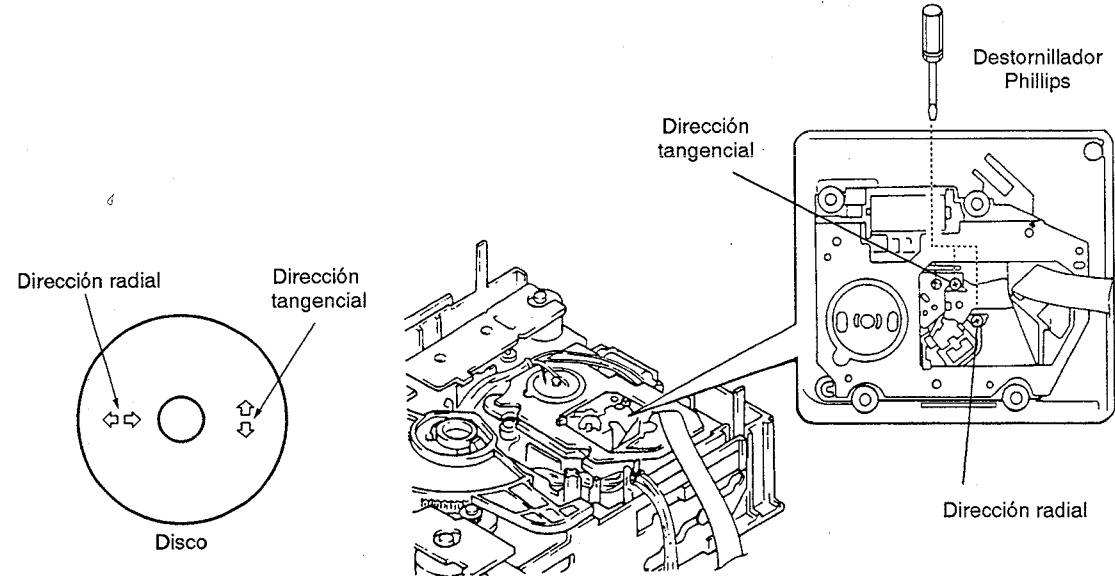


Figura 4

Lugares de ajuste

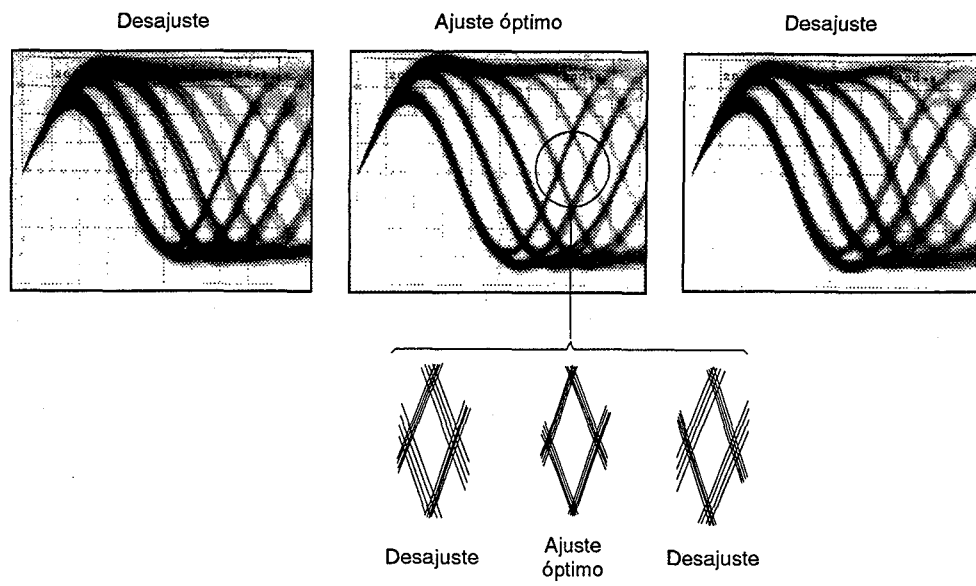


Figura 5 Patron optico

5. Ajuste del Nivel de RF

| | | | |
|---|---|--------------------------|------------------------------|
| ● Objetivo | Optimización de la amplitud de la señal de RF de reproducción. | | |
| ● Síntomas en caso de desajuste | La reproducción no se inicia o la búsqueda de canciones es imposible. | | |
| ● Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 1 (RF). | ● Estado del reproductor | Modo de prueba, reproducción |
| | [Ajustes] 50 mV/división 10 ms/división modo de CA | ● Lugar de ajuste | VR1 (potencia de láser) |
| | | ● Disco | YEDS-7 |
| <p>[Procedimiento]</p> <p>1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ , presione la tecla PGM (PROGRAM), después la tecla PLAY ▷ , por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.</p> <p>2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,1 V.</p> | | | |

6. Ajuste de la Ganancia del Bucle del Servo de Enfoque

| | | | |
|--|--|--|--|
| <ul style="list-style-type: none"> ● Objetivo | Optimización de la ganancia del bucle del servo de enfoque. | | |
| <ul style="list-style-type: none"> ● Síntomas en caso de desajuste | La reproducción no se inicia o el actuador de enfoque produce ruido. | | |
| <ul style="list-style-type: none"> ● Conexión de los instrumentos de medición | Consulte la figura 6. [Ajustes] CH1 CH2 20 mV/división 5mV/división modo X-Y | <ul style="list-style-type: none"> ● Estado del reproductor ● Lugar de ajuste ● Disco | Modo de prueba, reproducción VR152 (FCS. GAN) YEDS-7 |

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD >> o la tecla REV << para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM(PROGRAM), la tecla PLAY >, y después la tecla PAUSE ||| , por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

Figure 6

Ajuste de la ganancia de enfoque

Ganancia superior
Ganancia óptima
Ganancia inferior

7. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

| | | | |
|--|---|--------------------------|------------------------------|
| ● Objetivo | Optimización de la ganancia del bucle del servo de seguimiento. | | |
| ● Síntomas en caso de desajuste | La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas. | | |
| ● Conexión de los instrumentos de medición | Consulte la figura 7. | ● Estado del reproductor | Modo de prueba, reproducción |
| | [Ajustes] CH1 CH2 50 mV/división 50 mV/división modo X-Y | ● Lugar de ajuste | VR151(TRK. GAN) |
| | | ● Disco | YEDS-7 |

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD >> o la tecla REV << para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▷, y la tecla PAUSE ⏸, por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

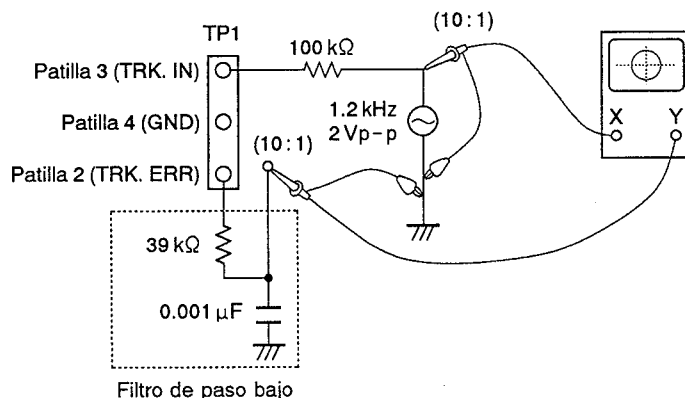
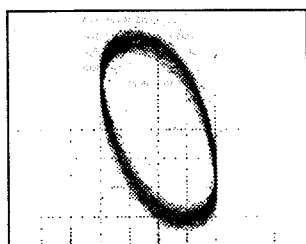
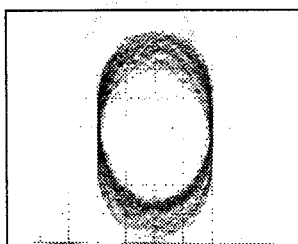


Figura 7

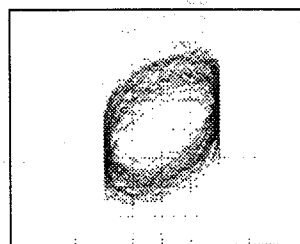
Ajuste de la ganancia de seguimiento



Ganancia superior



Ganancia óptima



Ganancia inferior

8. Verificación de la Señal de Error de Enfoque (Curva S de Enfoque)

| | | | |
|--|---|--|---|
| ● Objetivo | Juzgar si el captor está bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque. | | |
| ● Síntomas en caso de desajuste | | | |
| ● Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR). [Ajustes] 100 mV/división 5 ms/división modo de CC | ● Estado del reproductor ● Lugar de ajuste ● Disco | Modo de prueba, parada Ninguno YEDS-7 |

[Precedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla PGM (PROGRAM) y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PGM (PROGRAM), presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

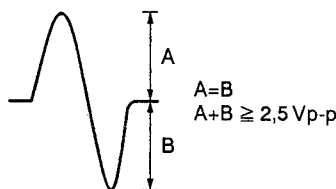


Figura 8

[Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguientes es posible que haya algo erróneo en el captor.

1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

9. FOR PD– M550 / KUXJS, KC, MEM, UB, PD– M455 / KUXJS, KC, PD– M453 / KUXJS, PD– M450 / KUXJS, KC AND MEM TYPES

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

9.1 FOR PD– M550 / KUXJS, KC, MEM AND UB TYPES

CONTRAST OF MISCELLANEOUS PARTS

The PD– M550 / KUXJS, KC, MEM and UB types are the same as the PD– M550 / KU type with the exception of the following sections.

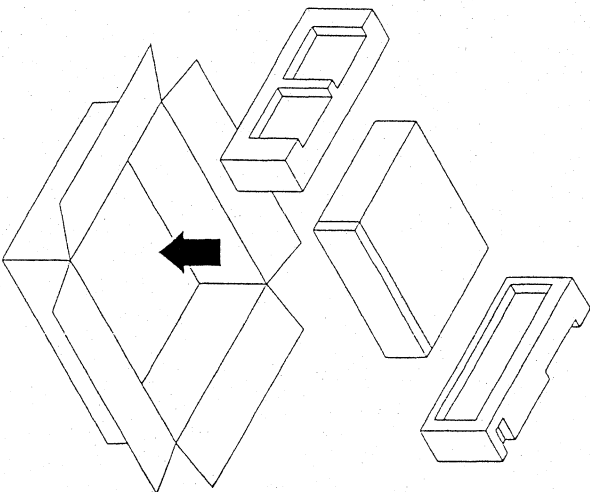
| Mark | Symbol & Description | Part No. | | | | | Remarks |
|------|---|----------------------|-------------------------|----------------------|-----------------------|----------------------|-------------|
| | | PD– M550/ KU type | PD– M550/ KUXJS type | PD– M550/ KC type | PD– M550/ MEM type | PD– M550/ UB type | |
| ⊙ | Mother board assembly | PWM1474* | PWM1483* | PWM1474 | PWM1475 | PWM1475 | For packing |
| △ | Power transformer (AC120V) | PTT1187* | PTT1203* | PTT1187 | ..... | ..... |  |
| △ | Power transformer (AC220V – 230V ) | ..... | ..... | ..... | PTT1188 | ..... |  |
| △ | Power transformer (AC230V – 240V ) | ..... | ..... | ..... | ..... | PTT1189 | |
| △ | Strain relief | CM– 22 | CM– 22 | CM– 22 | CM– 22B | CM– 22B | |
| △ | Display window | PAM1477 | PAM1477 | PAM1477 | PAM1505 | PAM1505 | |
| △ | AC power cord | RDG1010 | RDG1010 | RDG1010 | PDG1003 | PDG1036 | |
| | Connection cord with mini plug | PDE– 319 | PDE– 319 | PDE– 319 | ..... | ..... |  |
| | CD packing case | PHG1611 | PHG1672 | PHG1663 | PHG1690 | PHG1690 | |
| | Operating instructions (English) | PRB1142 | PRB1152 | PRB1142 | ..... | PRB1142 | |
| | Operating instructions (English / French / Dutch / Italian / German / Swedish / Spanish / Portuguese ) | ..... | ..... | ..... | PRE1144 | ..... |  |
| | Operating instructions (French) | | | PRC1031 | | | |

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

*: PWM1474 with PTT1187 is compatible with PWM1483 with PTT1203.

Therefore, when exchanging mother board assembly, exchange the assembly with the corresponding transformer.

● PACKING FOR KUXJS TYPE



MOTHER BOARD ASSEMBLIES (PWM1483 AND PWM1475)

The mother board assembly (PWM1483 and PWM1475) are the same as the mother board assembly (PWM1474) with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | Remarks |
|------|---|-------------|-------------|------------------|---------|
| | | PWM1474 | PWM1483 | PWM1475 | |
| Δ | IC31 D391-D394 R391 R392 JA391, JA392 (CONTROL (IN, OUT)) L395 Radial inductor | ..... | ..... | ICP-N10 | |
| | | ISS254 | ISS254 | ..... |  |
| | | RD1/6PM244J | RD1/6PM244J | ..... |  |
| | | RD1/6PM102J | RD1/6PM102J | ..... |  |
| | | PKN1004 | PKN1004 | ..... |  |
|  |  | ..... | ..... | LFAR22M | |

Note: The mother board assembly (PWM1483) is the same as the mother board assembly (PWM1474) for the service supply parts.

9.2 FOR PD - M455 / KUXJS AND KC TYPES

CONTRAST OF MISCELLANEOUS PARTS

The PD - M455 / KUXJS and KC types are the same as the PD - M455 / KU type with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | Remarks |
|------|---|-----------------------|--------------------------|-----------------------|-------------|
| | | PD - M455/ KU type | PD - M455/ KUXJS type | PD - M455/ KC type | |
| Δ | Mother board assembly Power transformer (AC120V) CD packing case Operating instructions (English) Operating instructions (French) | PWM1474 | PWM1483 | PWM1474 | For packing |
| | | PTT1187 | PTT1203 | PTT1187 | |
| | | PHG1596 | PHG1673 | PHG1661 | |
| | | PRB1142 | PRB1152 | PRB1142 | |
| | | | | PRC1031 | |

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

MOTHER BOARD ASSEMBLY (PWM1483)

The mother board assembly (PWM1483) is the same as the mother board assembly (PWM1474) for the service supply parts excepting power supply section.

9.3 FOR PD - M453 / KUXJS TYPE

CONTRAST OF MISCELLANEOUS PARTS

The PD - M453 / KUXJS type is the same as the PD - M453 / KU type with the exception of the following sections.

MOTHER BOARD ASSEMBLY (PWM1482)

| Mark | Symbol & Description | Part No. | | Remarks |
|------|--|-----------------------|--------------------------|-------------|
| | | PD - M453/ KU type | PD - M453/ KUXJS type | |
| Δ | Mother board assembly Power transformer (AC120V) CD packing case Operating instructions (English) | PWM1472 | PWM1482 | For packing |
| | | PTT1187 | PTT1203 | |
| | | PHG1668 | PHG1674 | |
| | | PRB1142 | PRB1152 | |

The mother board assembly (PWM1482) is the same as the mother board assembly (PWM1472) for the service supply parts excepting power supply section.

9.4 FOR PD - M450 / KUXJS, KC AND MEM TYP

CONTRAST OF MISCELLANEOUS PARTS

The PD - M450 / KUXJS, KC and MEM types are the same as the sections.

| Mark | Symbol & Description | PD - M450/ KU type |
|------|--|--|
| | | |
| ● | Mother board assembly Headphone board assembly Power transformer (AC120V) Power transformer (AC220V - 230V) Strain relief | PWM1468 PTT1187 CM-22 |
| | | |
| | | |
| | | |
| Δ | AC power cord Headphone knob Display window Function panel assembly Leg assembly | RDG1010 PAM1478 PEA1134 PXA1201 |
| | | |
| | | |
| | | |
| Δ | Insulator Stopper Function panel CD packing case Operating instructions (English) | Non supply PHG1597 PRB1142 |
| | | |
| | | |
| | | |
| Δ | Operating instructions (English / French / Dutch / Italian / German / Swedish / Spanish / Portuguese) Operating instructions (French ) | ..... ..... ..... ..... |
| | | |
| | | |
| | | |

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

MOTHER BOARD ASSEMBLIES (PWM1480 and PWM1469)

The mother board assembly (PWM1480 and PWM1469) are the same as the PD - M450 / KUXJS, KC and MEM types with the exception of the following sections.

| Mark | Symbol & Description | PWM1468 |
|------|---|--|
| | | |
| Δ | IC31 IC406 R445, R446 R447, R448 CN401 L395 Radial inductor | RD1/6PM681J |
| | | |
| | | |
| | | |

Note: The mother board assembly (PWM1480) is the same as the PD - M450 / KUXJS, KC and MEM types with the exception of the following sections.

HEADPHONE BOARD ASSEMBLY

The headphone board assembly of the PD - M450 / HEM type is the same as the PD - M450 / KUXJS, KC and MEM types with the exception of the following sections.

9.4 FOR PD - M450 / KUXJS, KC AND MEM TYPES

CONTRAST OF MISCELLANEOUS PARTS

The PD - M450 / KUXJS,KC and MEM types are the same as the PD - M450 / KU type with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | | Remarks |
|------|---|-----------------------|--------------------------|-----------------------|------------------------|-------------|
| | | PD - M450/ KU type | PD - M450/ KUXJS type | PD - M450/ KC type | PD - M450/ MEM type | |
| ● | Mother board assembly | PWM1468 | PWM1480 | PWM1468 | PWM1469 Non supply | |
| Δ | Headphone board assembly | PTT1187 | PTT1203 | PTT1187 | PTT1188 | |
| Δ | Power transformer (AC120V) | CM - 22 | CM - 22 | CM - 22 | CM - 22B | |
| Δ | Strain relief | | | | | |
| Δ | AC power cord | RDG1010 | RDG1010 | RDG1010 | PDG1003 PAC1370 | |
| | Headphone knob | PAM1478 PEA1134 | PAM1478 PEA1134 | PAM1478 PEA1134 | PAM1506 PEA1160 | |
| | Display window | PXA1201 | PXA1201 | PXA1201 | ..... |  |
| | Function panel assembly | | | | | |
| | Leg assembly | ..... | ..... | ..... | VNK1095 PNM1070 | |
| | Insulator | ..... | ..... | ..... | Non supply PHG1691 | |
| | Stopper | Non supply PHG1597 | Non supply PHG1675 | Non supply PHG1662 | ..... |  |
| | Function panel | PRB1142 | PRB1152 | PRB1142 | PRE1144 | |
| | CD packing case | ..... | ..... | ..... | ..... |  |
| | Operating instructions (English) | | | | | For packing |
| | Operating instructions (English / French / Dutch / Italian / German / Swedish / Spanish / Portuguese ) | ..... | ..... | ..... | ..... |  |
| | Operating instructions (French ) | ..... | ..... | PRC1031 | ..... |  |

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

MOTHER BOARD ASSEMBLIES (PWM1480 and PWM1469)

The mother board assembly (PWM1480 and PWM1469) are the same as the mother board assembly (PWM1468) with the exception of the following sections.

| Mark | Symbol & Description | Part No. | | | Remarks |
|------|--|---|---|--|---------|
| | | PWM1468 | PWM1480 | PWM1469 | |
| Δ | IC31 IC406 R445, R446 R447, R448 CN401 | RD1/6PM681J | RD1/6PM681J | ICP-N10 BA15218 RD1/6PM471J Non supply LFAR22M | |
| | L395 Ladiial inductor | ..... | ..... |  |  |

Note: The mother board assembly (PWM1480) is the same as the mother board assembly (PWM1468) for the service supply parts excepting power supply section.

HEADPHONE BOARD ASSEMBLY

The headphone board assembly of the PD - M450 / HEM type is the same as that of the PD - M550 and PD - M455 types.

9.5 SCHEMATIC DIAGRAM OF THE MEM AND UBE

1. RESISTORS :

Indicated in Ω , 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted.
M.M Ω , (F): ± 1%, (G): ± 2%, (K): ± 10%, (M): ± 20% tolerance.

2. CAPACITORS :

Indicated in capacity (μ F)/voltage(V)unless otherwise noted p : pF, ind voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

□ :DC voltage(V)at play state.
⇄ mA :DC current at play state.
Value Int ()is DC current at stop state.

4. OTHERS :

→ :Signal route.
⊙ :Adjusting point.
The Δ mark found on some component parts indicates the importance factor of the part. Therefore, when replacing, be sure to use part designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may improve in design.

5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY
S801 : POWER ON — OFF
S802 : EJECT
SERVO MECHANISM ASSEMBLY
INSIDE SWITCH
LOADING BOARD ASSEMBLY
S601 : LPS1
S602 : LPS2
SELECT BOARD ASSEMBLY
S603 : MZS1
S604 : MZS2
S605 : DCHM
S606 : DCNT

FUNCTION BOARD ASSEMBLY
(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 : <<] MANUAL SEARCH
S731 : <>]
S732 : PLAY
S733 : <<] TRACK SEARCH
S734 : <>]
S735 : ADLC

FUNCTION BOARD ASSEMBLY
(PD - M455, PD - M453 AND P)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM
S710 : REPEAT
S711 : PAUSE
S712 : AUTO F
S713 : HI - LITE
S714 : COMPU
S715 : PGM
S716 : DELETE
S717 : TIME FA
S730 : <<]
S731 : <>]
S732 : PLAY
S733 : <<]
S734 : <>]
S735 : ADLC

MEM TYPES

name as the PD - M450 / KU type with the exception of the following

| Part No. | | | | Remarks |
|---|---|---|--|-------------|
| - M450/ U type | PD - M450/ KUXJS type | PD - M450/ KC type | PD - M450/ MEM type | |
| VM1468 PTT1187 CM-22 | PWM1480 PTT1203 CM-22 | PWM1468 PTT1187 CM-22 | PWM1469 Non supply PTT1188 CM-22B | For packing |
| DG1010 AM1478 EA1134 KA1201 | RDG1010 PAM1478 PEA1134 PXA1201 | RDG1010 PAM1478 PEA1134 PXA1201 | PDG1003 PAC1370 PAM1506 PEA1160 | |
| n supply HG1597 RB1142 | Non supply PHG1675 PRB1152 | Non supply PHG1662 PRB1142 | VNK1095 PNM1070 Non supply PHG1691 | |
| ..... | ..... | ..... | PRE1144 | |
| ..... | ..... | PRC1031 | ..... |  |

ARDS CONNECTION DIAGRAM of the KUXJS and KC types,

PWM1469)
) are the same as the mother board assembly
ns.

| Part No. | | | Remarks |
|---------------------------|--------------------------------|---|---------|
| IM1468 | PWM1480 | PWM1469 | |
| 6PM681J | RDI1/6PM681J | ICP-N10 BA15218 RDI1/6PM271J RDI1/6PM471J Non supply LFAR22M | |

ame as the mother board assembly (PWM1468) for the service

I type is the same as that of the PD - M550 and PD - M455 types.

9.5 SCHEMATIC DIAGRAM OF THE MEM AND UB TYPES


1. RESISTORS :

Indicated in Ω , 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted K,K Ω ,
M,M Ω , (F); ± 1%, (G); ± 2%, (K); ± 10%, (M); ± 20% tolerance.

2. CAPACITORS :

Indicated in capacity (μ F)/voltage(V)unless otherwise noted p ; pF. Indication without
voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

 :DC voltage (V)at play state.
⇄ mA :DC current at play state.
Value In ()Is DC current at stop state.

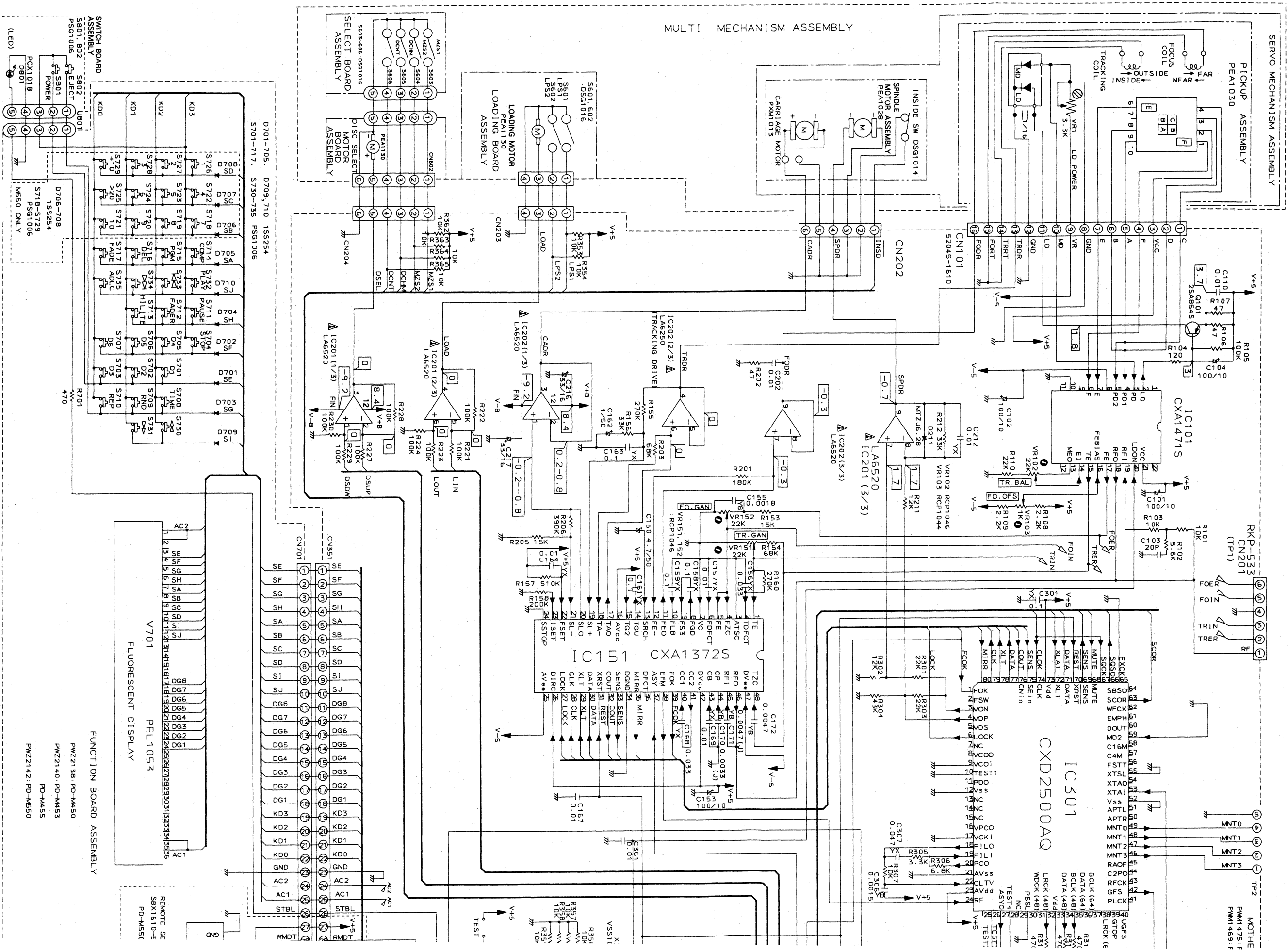
4. OTHERS :

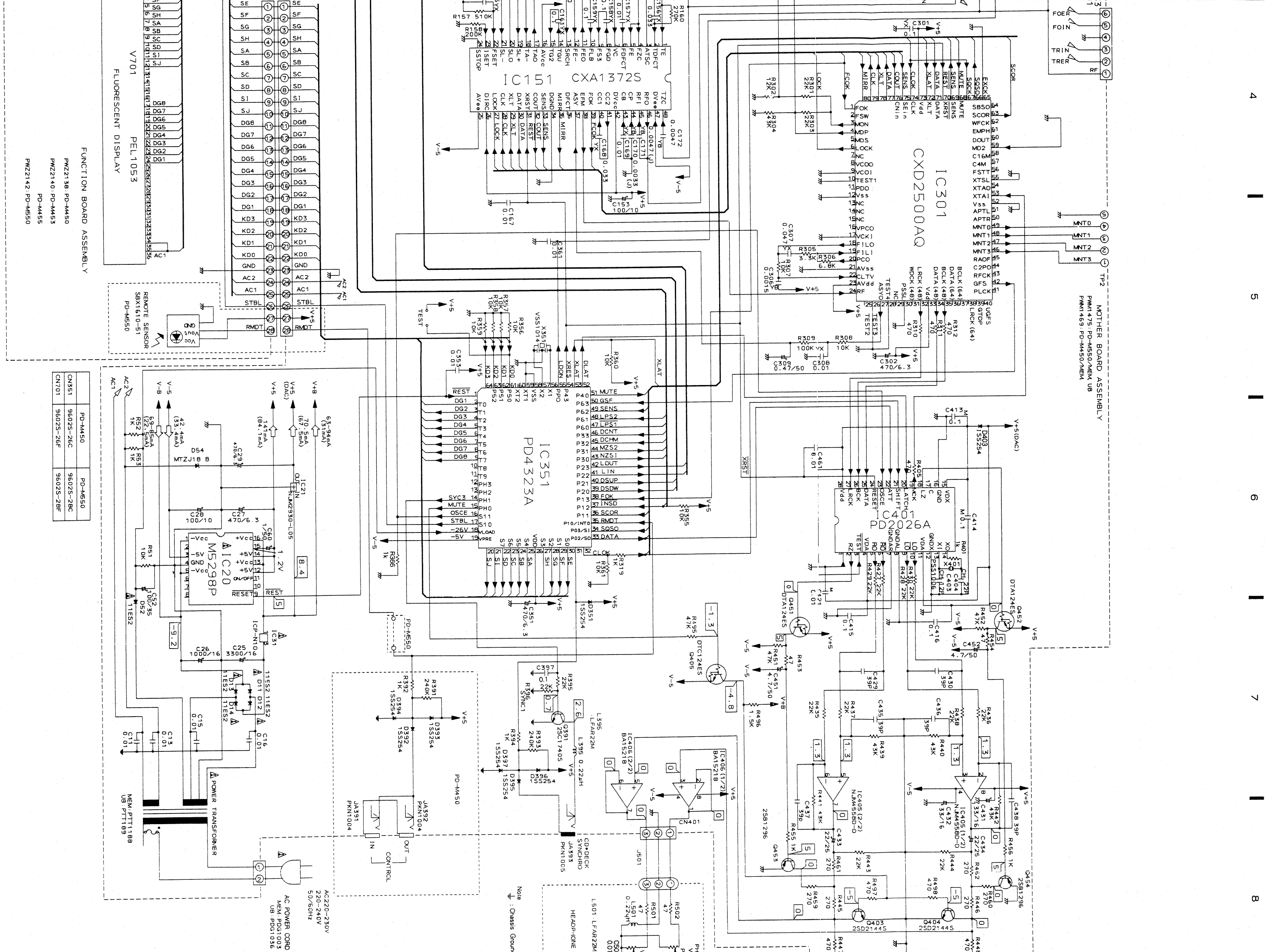
➡ :Signal route.
⊗ :Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety
factor of the part. Therefore, when replacing, be sure to use parts of identical
designation.
※ marked capacitors and resistors have parts numbers.

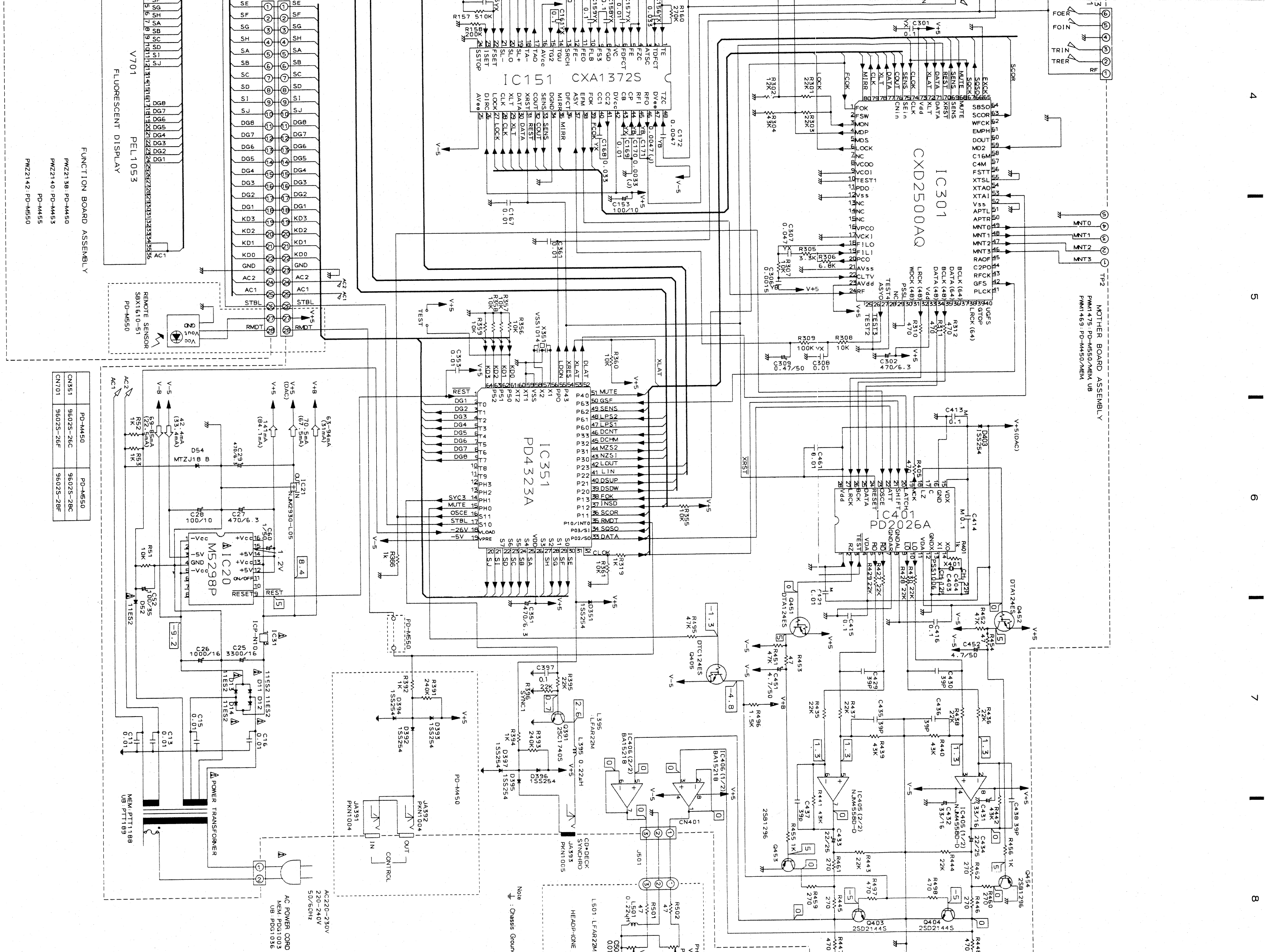
This is the basic schematic diagram, but the actual circuit may vary due to
improvements in design.

5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY
S801 : POWER ON—OFF
S802 : EJECT
SERVO MECHANISM ASSEMBLY
INSIDE SWITCH
LOADING BOARD ASSEMBLY
S601 : LPS1
S602 : LPS2
SELECT BOARD ASSEMBLY
S603 : MZS1
S604 : MZS2
S605 : DCHM
S606 : DCNT
FUNCTION BOARD ASSEMBLY
(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : 2, 20
S726 : 1
S727 : 2
S728 : 3
S729 : *10
S730 : <Δ>
S731 : ⇄>] MANUAL SEARCH
S732 : PLAY
S733 : ⇄Δ] TRACK SEARCH
S734 : ⇄Δ] TRACK SEARCH
S735 : ADLC
FUNCTION BOARD ASSEMBLY
(PD - M455, PD - M453 AND PD - M450 TYPES)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S730 : <Δ>
S731 : ⇄>] MANUAL SEARCH
S732 : PLAY
S733 : ⇄Δ] TRACK SEARCH
S734 : ⇄Δ] TRACK SEARCH
S735 : ADLC





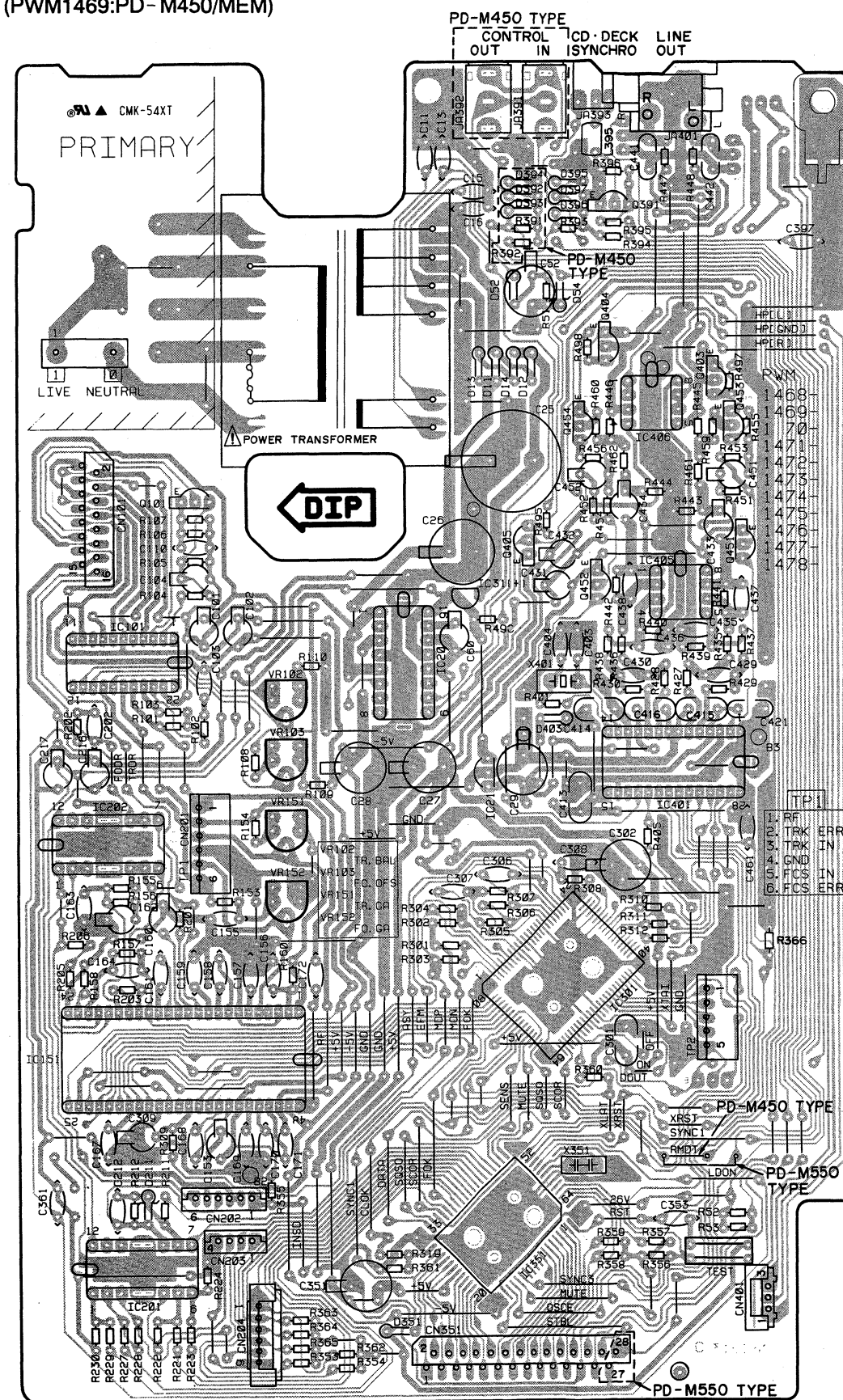


9.6 P.C.BOARD PATTERN OF THE MEM AND UB TYPES

| P.C.B. pattern diagram indication | Corresponding part symbol | Part name | P.C.B. pattern diagram indication | Corresponding part symbol | Part name |
|-----------------------------------|---------------------------|-------------|-----------------------------------|---------------------------|--|
| | | Transistor | | | Ceramic capacitor |
| | | FET | | | Mylar capacitor |
| | | Diode | | | Styrol capacitor |
| | | Zener diode | | | Electrolytic capacitor (Non polarized) |
| | | LED | | | Electrolytic capacitor (Polarized) |
| | | Varactor | | | Electrolytic capacitor (Polarized) |
| | | Tact switch | | | Power capacitor |
| | | Resistor | | | Semi-fixed resistor |
| | | Inductor | | | Resistor array |
| | | Coil | | | Resistor |
| | | Transformer | | | Resonator |
| | | Filter | | | Thermistor |

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

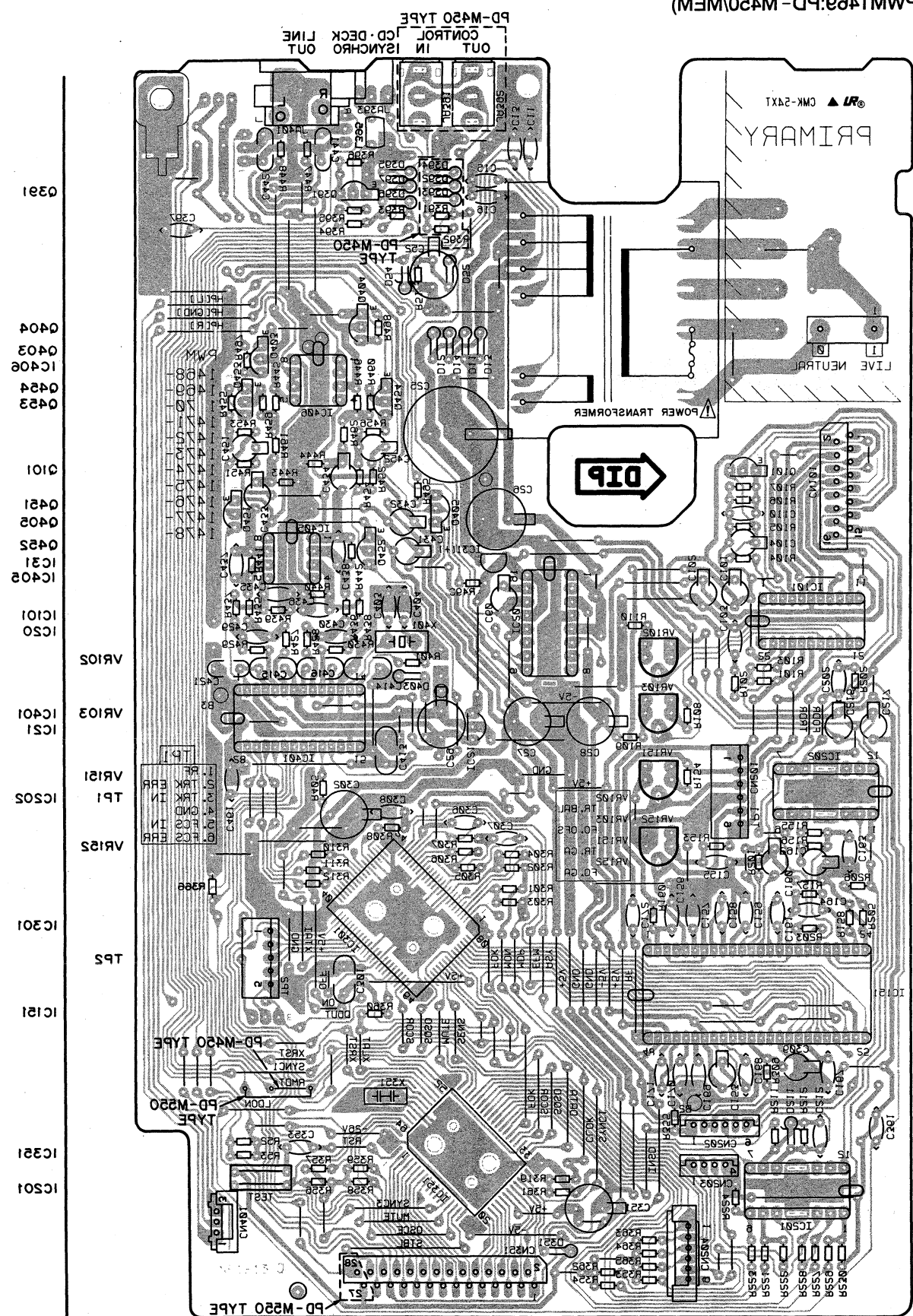
MOTHER BOARD ASSEMBLY
(PWM1475:PD - M550/MEM, UB)
(PWM1469:PD - M450/MEM)



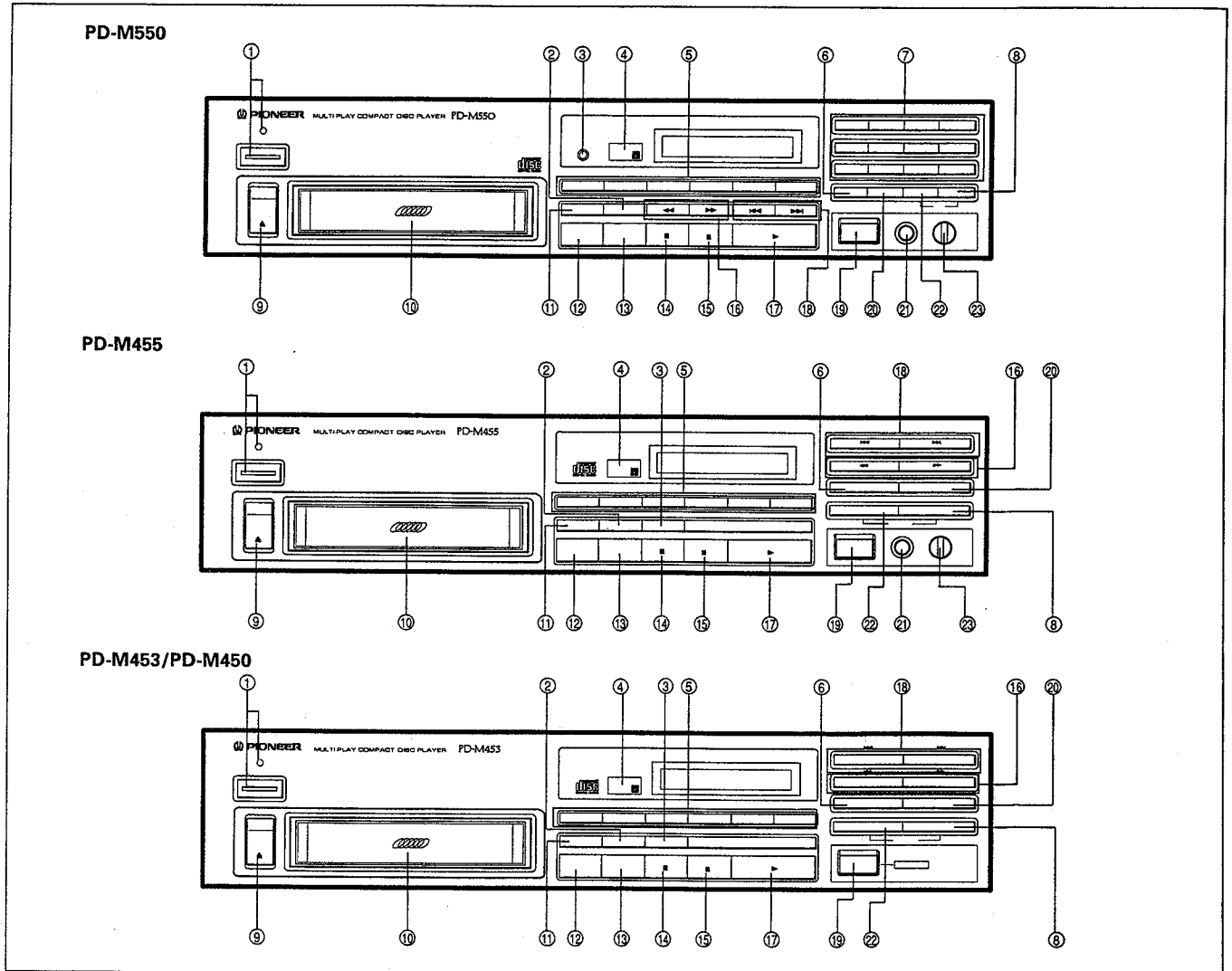
PD - M550/MEM,UB,
PD - M450/MEM

D

(P\WM1469:PD-M450\MEM)
(P\WM1472:PD-M250\MEM, UB)
MOTHER BOARD ASSEMBLY

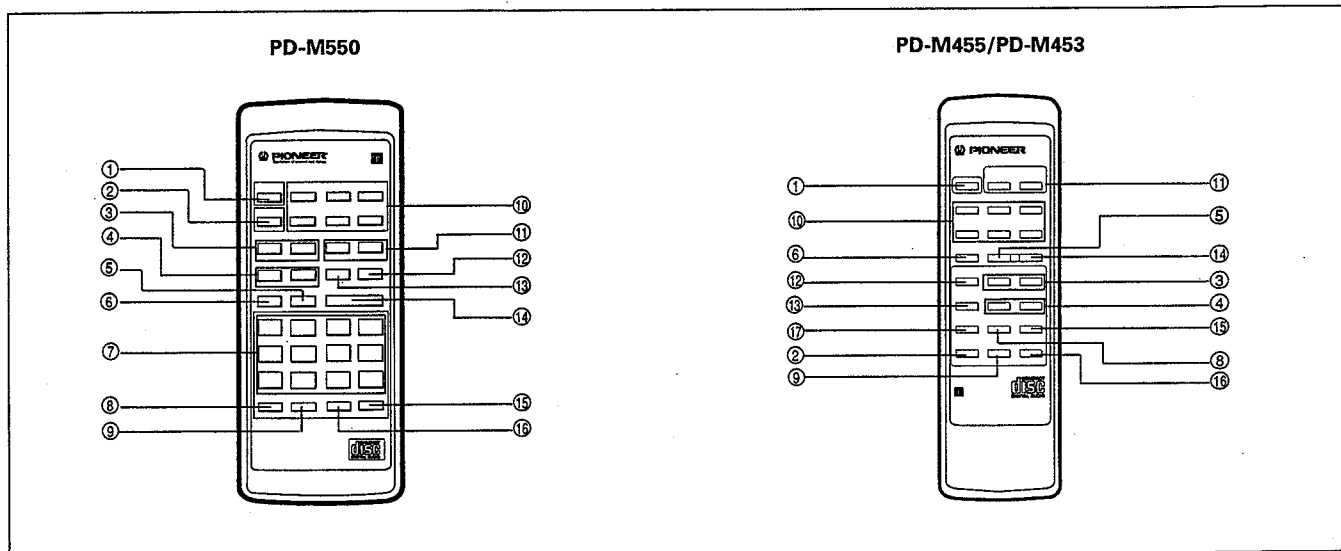


10. PANEL FACILITIES



FRONT PANEL

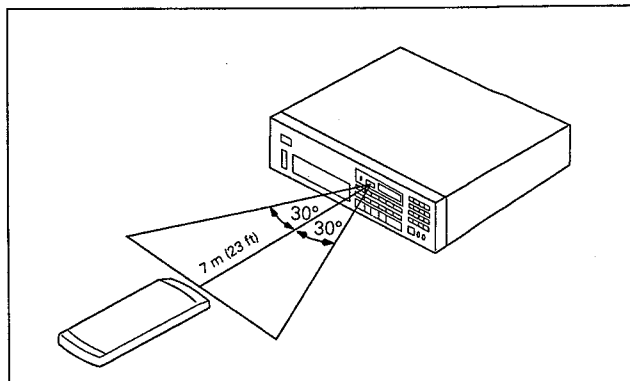
- | | |
|---|--|
| <p>① POWER STANDBY/ON switch and STANDBY indicator</p> <p>② AUTO FADER button</p> <p>③ TIME button</p> <p>④ Remote sensor (PD-M550/PD-M455/PD-M453 only) Receives the signal from the remote control unit. • The PD-M450 is not equipped with the remote sensor.</p> <p>⑤ Disc number buttons (DISC 1 - DISC 6)</p> <p>⑥ PGM (program) button</p> <p>⑦ TRACK NUMBER/Digit buttons (1-10, +10, ≥20) (PD-M550 only)</p> <p>⑧ TIME FADE EDIT button</p> <p>⑨ EJECT button (▲)</p> <p>⑩ Magazine insertion slot</p> | <p>⑪ REPEAT button</p> <p>⑫ RANDOM PLAY button</p> <p>⑬ HI-LITE SCAN button</p> <p>⑭ Stop button (■)</p> <p>⑮ Pause button (\|\|)</p> <p>⑯ Manual search buttons (◀◀/▶▶)</p> <p>⑰ Play button (▶)</p> <p>⑱ Track search buttons (◀◀/▶▶)</p> <p>⑲ ADLC (Automatic Digital Level Controller) button</p> <p>⑳ DELETE button</p> <p>㉑ Headphones jack (PHONES) (PD-M550/PD-M455 only)</p> <p>㉒ COMPU PGM EDIT button</p> <p>㉓ Headphones volume (PHONES LEVEL) (PD-M550/PD-M455 only)</p> |
|---|--|



REMOTE CONTROL UNIT (PD-M550/PD-M455/PD-M453 only)

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

- ① POWER button
- ② ADLC (Automatic Digital Level Controller) button
- ③ MANUAL search buttons (◀◀ / ▶▶)
- ④ TRACK search buttons (◀◀ / ▶▶)
- ⑤ PAUSE button (||)
- ⑥ STOP button (■)
- ⑦ Track number/Digit buttons (1-10, +10, ≥ 20) (PD-M550 only)
- ⑧ PGM (program) button
- ⑨ CHECK button
- ⑩ DISC NUMBER buttons (1 - 6)
- ⑪ OUTPUT LEVEL buttons (+ / -)
- ⑫ RANDOM PLAY button
- ⑬ HI-LITE SCAN button
- ⑭ PLAY button (▶)
- ⑮ DELETE button
- ⑯ CLEAR button
- ⑰ FADER button (PD-M455/PD-M453 only)



REMOTE CONTROL OPERATIONS (PD-M550/PD-M455/PD-M453 only)

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.

Notes for PD-M450:

Operate the PD-M450 using the remote control unit which accompanies the amplifier.

11. SPECIFICATIONS

1. General

| | |
|----------------------------------|---|
| Type | Compact disc digital audio system |
| Power requirements | |
| European models | AC 220 - 230 V, 50/60 Hz |
| U.K. and Australian models | AC 230 - 240 V, 60 Hz |
| U.S. and Canadian models | AC 120 V, 60 Hz |
| Other models | AC 110/120 - 127/220/240 V (switchable), 50/60 Hz |
| Power consumption | 12 W |
| Operating temperature | +5°C - +35°C (+41°F - +95°F) |
| Weight | 3.9 kg (8 lb, 10 oz) |
| External dimensions | |
| PD-M550 | 420(W) X 291(D) X 101(H) mm 16-9/16(W) X 11-7/16(D) X 4(H) in |
| PD-M455/PD-M453/PD-M450 | 420(W) X 291(D) X 96(H) mm 16-9/16(W) X 11-7/16(D) X 3-12/16(H) in |

2. Audio section

| | |
|---------------------------|--|
| Frequency response | 2 Hz - 20 kHz |
| S/N ratio | 102 dB or more (EIAJ) |
| Dynamic range | 96 dB or more (EIAJ) |
| Harmonic distortion | 0.003% or less (EIAJ) |
| Output voltage | 2.0V |
| Wow and flutter | Limit of measurement (±0.001% VV.PEAK) or less (EIAJ) |
| Channels | 2-channel (stereo) |

3. Output terminal

Audio line output
Headphone jack with volume control (PD-M550/PD-M455 only)
Control input/output jacks (available with the PD-M450 and U.S. and Canadian models of the PD-M550, PD-M455 and PD-M453)
CD-DECK SYNCHRO jack

4. Functions

Number of discs to be stored - maximum 6.

Basic operation buttons
● PLAY, PAUSE, STOP

Search function
● Disc search
● Track search
● Manual search

Magazine Hi-Lite Scan
● DISC SCAN
● TRACK SCAN

Programming
● Maximum 32 steps
● Pause
● Program check/correction (remote control unit provided with PD-M550/PD-M455/PD-M453 only)
● Program clear (single track or all tracks) (remote control unit provided with PD-M550/PD-M455/PD-M453 only)
● Delete play

Repeat functions

- 1 track repeat
- All discs repeat
- Program repeat
- Random play repeat
- Delete play repeat
- Delete random play repeat
- Magazine Hi-Lite scan repeat

Random play

- Random play (repeat also available)
- Delete random play (repeat also available)

Switching display

Time consumed, remaining time (track/disc), and total time

Timer start

ADLC

Digital level controller (PD-M550/PD-M455/PD-M453 only)
Volume control can be done.

One-touch fade

Fade-in and fade-out possible.

Time fade editing

Selects the tracks within the specified time. Playback pauses with a fade-out.

Compu program editing

Selects the tracks for both sides within the specified time.

Power ON/OFF function (remote control unit provided with PD-M550/PD-M455/PD-M453 only)

Automatic Power On


Power Down Eject

5. Accessories

| | |
|---|---|
| ● Remote control unit (PD-M550/PD-M455/PD-M453 only) | 1 |
| ● Size AAA/R03/dry batteries | 2 |
| (PD-M550/PD-M455/PD-M453 only) | 1 |
| ● Six-compact-disc magazine | 1 |
| ● Control cord (provided with PD-M450 and U.S. and Canadian models of PD-M550/PD-M455/PD-M453 only) | 1 |
| ● Output cable | 1 |
| ● Operating instructions | 1 |

NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with  mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs.